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FLUOR FERNALD, INC.
SILOS PROJECT

URANIUM ASSAY ADJUSTMENT PROJECT WORK PLAN

Prepared by Fernald Closure Project
March 2005

40600-PL-0001
Revision 02

Prepared for
U. S. Department of Energy
Contract DE-AC24-01 OH20115

5880

Work Plan for the Uranium Assay Adjustment Project

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Work Plan for the Uranium Assay Adjustment Project

Revision History

Revision	Date	Reason
1	11/11/04	Incorporated comments from Blue Sheet Review
2	03/04/05	Incorporated comments from Ohio EPA

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LIST OF ACRONYMS

ACA	Amendment Consent Agreement
AEDO	Assistant Emergency Duty Officer
AWWT	Advance Waste Water Treatment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
HEPA	High-Efficiency Particulate Air (filter)
HVAC	Heating Ventilation and Air Conditioning
HWMU	Hazardous Waste Management Unit
IDLH	Immediate Dangerous to life and Health
LLW	Low-Level Waste
MDC	Major Diagnostic Category
MEF	Material Evaluation Form
MC&A	Material Control and accountability
CFR	Code of Federal Regulations
MLLW	Mixed Low-Level Radioactive and Hazardous Waste
OAC	Ohio Administrative Code
PBS	Performance Baseline Summary
PCB	Polychlorinated Biphenyl (s)
PPE	Personal Protective Equipment
PPM	Parts Per Million
PWID	Project Waste Identification and Disposition
RACM	Reasonably Available Control Measures
RCRA	Resource Conservation and Recovery Act.
RMI	Reactive Metals Incorporated
SAP	Sampling and Analysis Plan
TC	Target Concentration
TCA	1,1,1, Trichloroethane
TSCA	Toxic Substance Control Act
TSDF	Treatment Storage and Disposal Facility (RCRA)
WBS	Work Breakdown Structure
WAO	Waste Acceptance Organization
WAC	Waste Acceptance Criteria

1. INTRODUCTION

This work plan describes the objectives and scope of work for the Fluor Fernald, Inc. (Fluor Fernald) Uranium Assay Adjustment Project to be conducted at the U. S. Department of Energy (DOE) Fernald Site. The Fernald site, also known as the Fernald Closure Project (FCP), is a government owned, former uranium processing facility located near Cincinnati, Ohio. The site was placed on the National Priorities List in 1989 and is currently undergoing remediation under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) in accordance with the 1991 *Amended Consent Agreement (ACA)* between the DOE and the U. S. Environmental Protection Agency (EPA).

The waste to be processed and disposed of in the Uranium Assay Adjustment project is currently stored in nine containers. The waste is comprised of Dust Collector Residues, Chloride Salt Sludges, Scrap Salts High Fluoride, U_3O_8 (Black Oxide) High Fluoride, Scrap U_3O_8 (Black Oxide) and Oily Sludges/Grease. The waste has a multitude of chemical and physical forms and will be blended with dry, general purpose sand to achieve the desired uranium concentration adjustment.

1.1. Objectives

Provide for the one time processing of slightly enriched mixed low-level waste (MLLW) so that Fluor Fernald can ship it to an approved off-site Treatment Storage and Disposal Facility (TSDF) for further treatment of the RCRA constituents to meet land disposal restrictions (LDR) requirements in accordance with applicable Federal, State and local regulations. The waste contains a combined uranium mass of 507.199 kilograms having enrichment range between 0.71 73 and 0.99 percent U-235. The MLLW are currently stored in nine containers and in its present form the waste does not meet applicable radiological waste acceptance criteria at any of our approved TSDF's. The project will develop an acceptable method for mixing / blending the MLLW with dry, general purpose sand to adjust the enrichment level of the MLLW to meet the radiological waste acceptance criteria at an approved TSDF.

An on-site processing facility will be set up in Building 93A for processing this waste and preparing it for shipment to an approved treatment and disposal provider under contract with Fluor Fernald, Incorporated. Accomplishing the project will require participation from Project Support Departments, Project Management, and Operations.

1.2. Organization of the Work Plan

This project work plan has been organized to match the Work Breakdown Structure of the Project. The plan identifies the parties responsible for each activity including its management and control. Section 2.0 of the Work Plan provides a description of the waste to be processed and dispositioned in terms of the Material Evaluation Form (MEF) characterization process. Section 3.0 describes the planning that is required for the job and defines how the planning is documented herein. Section 4.0 describes the packaging and handling facility and the activities that must be accomplished to prepare the facility for use by the project. Section 5.0 describes the management of materials and waste that is to be performed for each of the unique waste streams. Section 6.0 describes project activity to overview and provide direction and control of the treatment activities of the subcontractor. Section 7.0 describes project activity to overview and provide direction and control of the disposal activities of the disposal site.

2. DESCRIPTION OF THE WASTE

There are nine containers of waste to be processed in this project. The following is a description of each container:

Container Number W207183 and W207184

The material in these drums is described as Dust Collector Residues and is characterized under MEF 2987.

Figure 2.1 - W207183 Contents

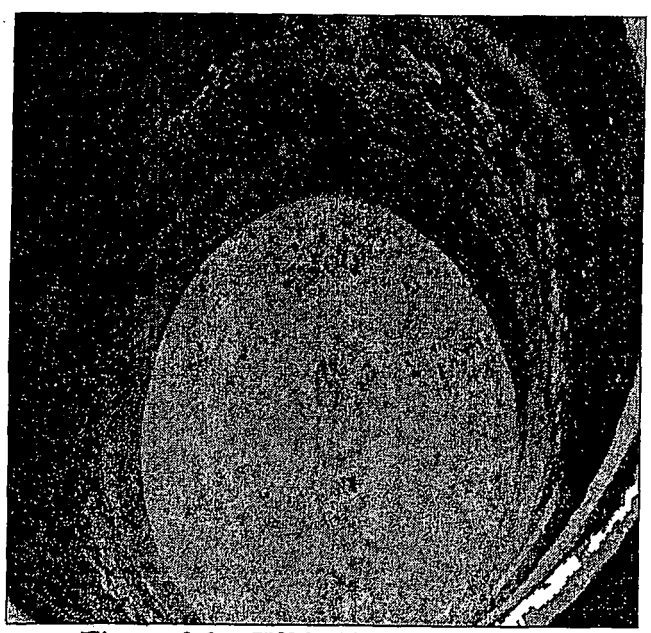


Figure 2.2 – W207184 Contents

Determination

RCRA Hazardous, Low-Level Radioactive Waste: F002, D008

Descriptive Name

Dust, dust collector bags, and dust collector residue from the Trane incinerator.

Process Generating the Waste

This waste was generated during Safe Shutdown activities when the Trane incinerator ancillary equipment was cleaned out. The Trane incinerator was part of HWMU #28, and was characterized as F002 and D008. The HWMU has not been clean closed, there are no available records indicating the dust collectors had been cleaned previously, and there are no analytical results available for this material to indicate that no F002 or D008 waste was a part of this waste stream. Therefore, this dust collector material is obliged to be characterized the same as the HWMU. Thus, this waste is characterized as F002 and D008 RCRA hazardous low-level radioactive waste. According to the verification forms, the residue was scraped and vacuumed from the baghouse, the hopper, and the plenum of the G2-95 dust collector. The bags, of course, originate from the baghouse.

Radiological/Chemical Composition

Analytical data collected in July 2004, shows a uranium concentration of 113000 ug/g or 11.3% and a U235 concentration of 0.942% for container number W207183, and a uranium concentration of 302000 ug/g or 30.2% and a U235 concentration of 0.986% for container number W207184.

Hazardous Waste Listings and Characteristics

Listings – The waste comes from the Trane incinerator, which was part of HWMU #28 and which has an F002 listing for 1,1,1-TCA. This listing will also apply to the waste managed under this MEF. This waste does not meet the listing descriptions for K, P, or U-listed wastes per 40 CFR 261.32 and 261.33.

Characteristics – This material is not a liquid or a gas and thus is not ignitable or corrosive as defined in 40 CFR 261.21 and 261.22. The material is also not expected to be unstable or reactive as defined in 261.23.

The waste comes from the Trane incinerator, which was part of HWMU #28 and which carries the D008 toxicity characteristic for lead. Unless sampling is performed to refute exceeding the regulatory level for lead, the D008 characteristic will remain associated with this waste.

TSCA Regulated PCB or Asbestos Waste, and OAC Infectious Waste

This waste stream is not expected to have PCBs, asbestos, or infectious wastes associated with it.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution

MDCs 029, 033, and 062 are not identified in SA-9601916 or RM-0005 as being pyrophoric or gas generating. They are also not expected to be combustible or reactive. See form FS-F-5716: *Determination of Pyrophoricity, Gas Evolution, Combustibility, and Reactivity of Containerized Wastes and Nuclear Materials* for further information.

Container Number W207823

The material in this drum is described as Sludges, Salt, Soft, chloride and is characterized under MEF 20139.

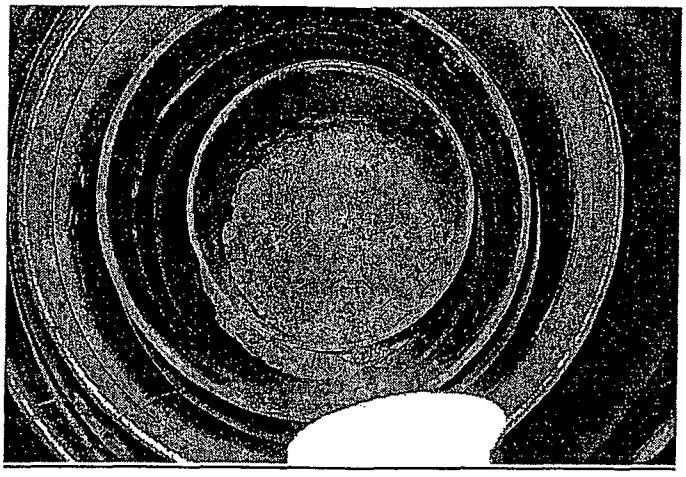


Figure 2.3 – W207823 Contents

Determination

RCRA hazardous, low-level radioactive waste: D005 (barium)

Descriptive Name

This material is various wastes and samples from RMI operations that are hazardous for barium.

Process Generating the Waste

The RMI facility, located in Ashtabula, Ohio, was where uranium metal shapes were extruded. The uranium metal was processed in a molten salt bath (usually barium chloride) to facilitate the extrusion process. The salt baths were heated to approximately 1100 °F and were used to make the uranium malleable enough to extrude. The baths were emptied occasionally in order to replace the salt and refurbish the worn out bricks within the salt bath. As a result of this process, wastes with concentrations of barium that exceed the regulatory limit were generated.

This MEF manages various wastes and samples of waste that are RCRA hazardous for barium and that were generated from RMI processes. Examples of waste include, but are not limited to:

- Furnace bricks that lined the salt bath
- Pieces of graphite from the extrusion press
- Rock, dirt, floor sweepings, trash, and concrete from RMI
- Bottoms from the salt bath

Radiological/Chemical Composition

Radiological: According to MC&A data the total uranium concentration is less than 20% and the uranium-235 isotopic concentration is less than 1.25 wt.%. Sampling has been schedule to verify the assigned assay.

Chemical: Volatile organics were not used in the process of uranium extrusion at RMI and are not constituents of concern for this waste stream. Barium is the primary concern for these wastes. Other metals that have been detected in these wastes as well include cadmium, chromium, and lead.

Hazardous Waste Listings and Characteristics

Listings: Process knowledge does not indicate that these wastes contain or came into contact with any listed wastes.

Characteristics: Based on the matrix of the material and process knowledge of the generation of the waste, it is not expected to be ignitable, corrosive, or reactive. Barium is the only constituent found in these wastes that exceeds its respective TC regulatory level. These wastes are characterized by the waste code D005 for barium.

TSCA Regulated PCB or Asbestos Waste, and OAC Infectious Waste

This waste is not regulated PCB, asbestos, or OAC infectious waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution

This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See FS-F-5716 for further detail.

Container Numbers W233544 and 234484

The material in these drums is described as Scrap Salts, High Fluoride, Including Floor Sweepings and is characterized under MEF 3913.

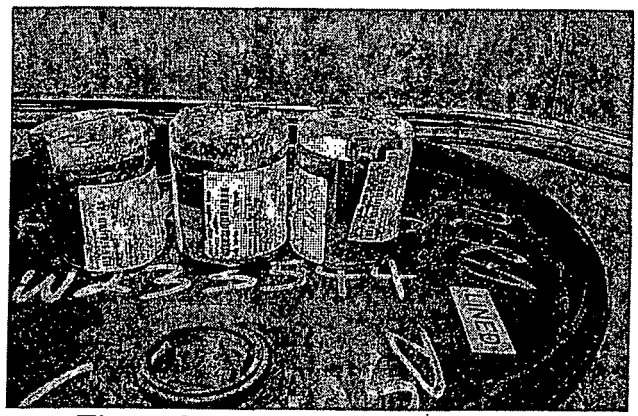


Figure 2.4 – W233544 Contents

Figure 2.5 – W234484 Contents

Determination
RCRA-hazardous, low-level radioactive, mixed D006

Description
Sampler's logs describe the waste as "dirt" and "powder."

Process Generating the Waste
Plant 4 was the green salt plant where UO_3 was converted to UF_4 (green salt). The green salt would then be packaged and sent to Plant 5 and used as the feed material to form uranium metal. Based on visual inspections, this material consists of particulate waste possibly generated by a vacuum cleaner or a dust collector. The actual activity generating this waste and the specific area where this waste was generated is unknown.

Radiological/Chemical Composition
Sampling and analysis was conducted on this material under sample plan 2003-1677, and indicates total uranium from 271000 to 387000 ug/g or 27.1% to 38.7% and U235 at 0.802% to 0.82%.

Sampling and analysis was conducted on this material under FEMP SAP 97-1397. The results indicate that the waste exhibits the characteristic of toxicity for cadmium, chromium, and lead. The wasted is regulated as a hazardous waste under RCRA and is assigned D006, D007, and D008 hazardous waste codes.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See FS-F-5716 for further detail.

Container Number W514065
The material in this drum is described as U_3O_8 (Black Oxide) +8 Mesh Low Fluoride and is characterized under MEF 50364.

Figure 2.6 – W514065 Contents

Determination
RCRA hazardous waste, only hazardous for chromium; D007 (chromium), F001/F002

Description Name
This material is coded as U_3O_8 +8 mesh - low fluoride from the Plant 8 Box Furnace.

Process Generating the Waste
Recycle materials containing impurities were roasted in the Plant 8 Box Furnace to oxidize the impurities. Recycle material included uranium metals, black oxide (U_3O_8), furnace salts, dust collector materials, floor sweepings, and miscellaneous burnables.

The Visual Inspection Report describes this material as: black material, powder, some 1/4" to 1/8" chunks and some light green color on the surface and some white material mixed in. This description is consistent with the 122 Material type code description of +8 mesh size uranium oxide, which would have been or contained coarse material. A lot code assignment of 824SRC/122 MTC and the Visual Inspection description are consistent with a product of the Box Furnace.

Materials sent to the Box Furnace were recycle material including uranium metals, black oxide (U_3O_8), furnace salts, dust collector materials, floor sweepings, and miscellaneous burnables. The Box Furnace has been determined to be a Hazardous Waste Management Unit (HWMU) based on evidence that rags containing spent solvents and degreasing solvents were processed through the furnace. Based on the mixture rule, this waste stream will receive the spent solvent designation F001/F002 for the spent solvent 1,1,1-trichloroethane.

Radiological/Chemical Composition
Radiological analysis conducted in January 2004 indicated a total U concentration of 68 69.17. 6% and the weight percent of U^{235} is 0.905 943 wt%.

Chromium was the only TC metal detected and was reported at a concentration greater than the regulatory limit. The detection of chromium may be attributable to uranium interference, but this is not confirmed. This waste will be considered hazardous for chromium based on the existing information.

The waste is therefore, characterized as D007 (chromium), F001/F002 RCRA hazardous low-level mixed radioactive waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See
FS-F-5716 for further detail.

Container Number W234711, W234852, and W234882
The material in these drums is described as Oily Sludge's and Grease and is characterized under MEF 10027.

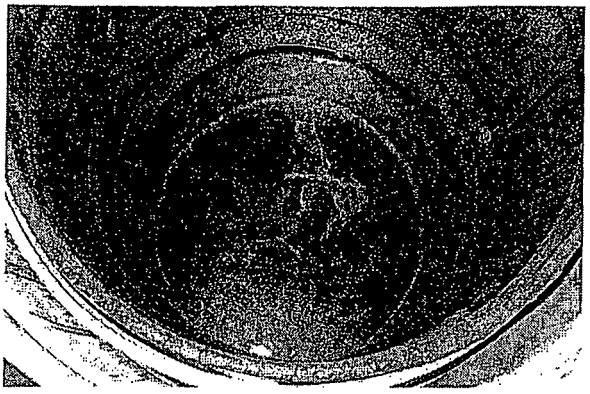


Figure 2.7 – 234711 Contents

Figure 2.8 – W234852 Contents

Figure 2.9 – W234882 Contents

Determination
RCRA hazardous (F001, D039, D040), low level waste.

Descriptive Name
This material is described by the lot code marking as contaminated insoluble oil and sludges generated at Plant 6. Visual inspection indicates the material is mostly oil/sludge and water.

Process Generating the Waste
According to the Plant 6 manager, this waste oil was mainly collected from the routine draining of gear oil from gear housings. Some of the oil may have been generated during repairs and other routine

maintenance on machinery in Plant 6. The most likely source of the water in this waste is coolant water leaking into the gears and contaminating the oil.
1, 1, 1 Trichloroethane (TCA) was not used to clean the gear housings, as it would ruin the bearings. The TCA found in this waste stream is the result of Plant 6 personnel dumping TCA that had been used to clean parts and tools into the waste oil drums.

Radiological/Chemical Composition
According to the laboratory report generated in September 2004, the analysis for W234852 indicates 163000 ug/g uranium or 16.3% and 0.726% U235. The analysis for W234882 indicates 288000 ug/g uranium or 28.8% and 0.775% U235. And the analysis for W234711 indicates 9290 mg/L uranium or21.6% and 0.801765% U235 respectively.

This waste consists primarily of water and oil/sludge. Additional constituents include the following: 1,1,1 trichloroethane [1.3 to 38,000 ppm], acetone [0.40 to <62 ppm], toluene [<.05 to <31], methylene chloride [<.05 to <31 ppm], trichloroethene [<.05 to <31 ppm], tetrachloroethylene [<.05 to <31 ppm], barium [<.2 to .389 ppm].

Samples were taken from the individual oil and water layers in the same drum. The data were percent averaged based upon the layering volumes given in the sampling log to yield one "sample". This provided a significantly greater statistical accuracy for determining constituent concentrations.

Hazardous Waste Listings and Characteristics
TCA used for its solvent properties is RCRA listed F001 waste, therefore, the waste oil will also be considered F001 listed waste. The Plant 6 manager could not explain how any of the other solvent constituents that exist in this waste stream got there, therefore, no other RCRA listings will apply.

TSCA Regulated PCB, Asbestos Waste, and OAC Infectious Waste
Based on process knowledge this waste is not expected to be TSCA regulated or contain asbestos or infectious waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste has been evaluated for pyrophoricity, combustibility, reactivity, and gas evolution. The results of the evaluation indicate the waste does not exhibit pyrophoric, or reactive characteristics. However, this waste stream does exhibit the potential to be combustible in the presence of an external ignition source, and to produce methane gas. See FS-F-5716 for more specific information.

Table 2-1 – Inventory Summary

MEF Number	Container Number	Container Type	Tare Weight	Net Weight	Lot Code	% U-235	% U	U LBS	Description
2987	W207183	110	228	390	S093-240-O-062-0260	0.93	26.72	104.21	Dust Collector Residues, High Fluoride
2987	W207184	110	221	180	S093-240-O-062-0260	0.93	26.72	48.10	Dust Collector Residues, High Fluoride
20139	W207823	085	174	178	X888-FTA-O-044-S303	1.1	15.08	26.84	Sludge's Salt Soft, chloride
3913	W233544	030	36	5	R100-400-V-065-0499	1.0	70.00	3.50	Scrap Salts, High Fluoride
3913	W234484	055	73	178	R100-400-V-065-0305	1.0	60.00	106.80	Scrap Salts, High Fluoride
10027	W234711	085	148	464	R078-600-V-039-0447	0.78	22.20	103.01	Sludge's, Oily
10027	W234852	085	133	380	R078-600-V-039-0447	0.78	22.20	84.36	Sludge's, Oily
10027	W234882	085	133	286	R078-600-V-039-0447	0.78	22.20	63.49	Sludge's, Oily
50364	W514065	085	137	833	R094-824-0-112-4127	0.943	69.17	184.93	U308 + Mesh. Low Fluoride

3. PROJECT PLANS AND MANAGEMENT

3.1. Project Work Plan

This Project Work Plan has been prepared to describe the scope of work and activities to accomplish the work that is required to disposition the inventory of waste specified in Section 2. The planning and execution of this work is the Uranium Assay Adjustment Project.

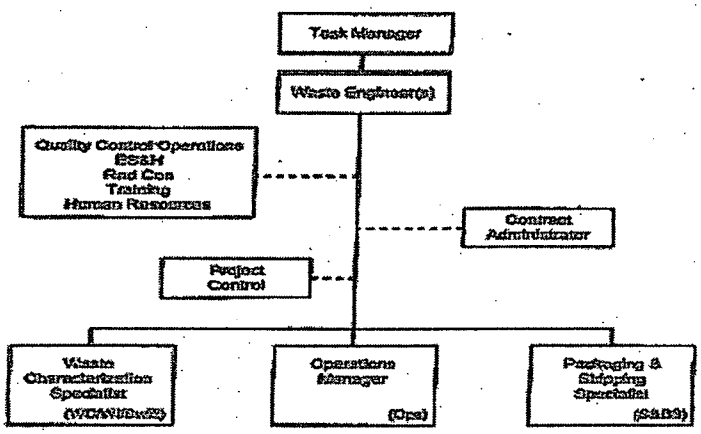
The Uranium Assay Adjustment Project is a sub activity of the larger Waste Disposition activity located in the Fluor Fernald Work Breakdown Structure (WBS) under WBS element 1.1.1.H.E. within the Silos Project. The Silos Project is located in Project Baseline Summary (PBS) 7. Waste Disposition scope includes the disposition of all Old Generation Wastes remaining on-site after the close of the Waste Management Project with was located in PBS 10 and PBS 11 respectively.

3.2. Project Management

3.2.1. Organization

The Project Team has been organized under the Operations support section of the Waste Shipping and Receiving Department within the Silos Project. Figure 3-1 shows how the Project Team has been organized. The Project Team has been assembled with participation from the Project Technical Support Area, the Project Management area, and the Operations area.

Figure 3-1 – Project Organization



Task Manager

The Task Manager has oversight in managing all activities of the Project. These include:

- Directing project activities in accordance with customer and corporate requirements including applicable laws, regulations, standards, and specification to achieve the required results.
- Communicate formally and informally with DOE, Corporate and upper level project management.

Waste Engineer(s)

The Waste Engineer(s) is (are) responsible for leading and directing all activities of the Project. These include:

- Being the focal point of project activities and ensuring all technical, quality, cost, and schedule requirements are being met.
- Directing the preparation and maintenance of all project plans and procedures.
- Directing the acquisition or otherwise securing of materials, equipment, and services necessary to prepare the facility for process operations.
- Plan, schedule, review, coordinate, and integrate the work of the project team to produce deliverables that accomplish project milestones and objectives.
- Preparing work packages and coordinating their review and approval.
- Tracking project progress and preparing and providing project progress and status reports.
- Tracking and expediting the resolution of problems that could threaten project success.
- Planning, administering and overseeing personnel selection, training, and qualification.
- Providing field support to Operations during processing and packaging operations.

Operations Manager

The team's Operations Manager will assist the Task Manager as needed in handling the waste through characterization and preparation for shipment. These include:

- Ensuring operational readiness of equipment and personnel and taking any action necessary to achieve and maintain readiness.
- Planning and supervising processing activities and staging of waste for shipping.
- Planning and supervising the handling of waste and the collection of samples and their identification, tracking and control.
- Planning and supervision of housekeeping and maintenance activities of the facility and its equipment.

Packaging and Shipping Specialist

The Team's Packaging and Shipping Specialist is responsible for assisting the Task Manager in ensuring the waste is properly classified, packaged and shipped to the treatment facility and ultimately to the disposal facility. This includes:

- Ensuring that all containers are properly packaged, marked, and labeled in accordance with 49 Code of Federal Regulations (CFR).
- Reviewing the characterization data to properly classify the waste.
- Preparing the shipping manifest(s).
- Preparing other associated documents required to make up the acceptance data package required for disposal.

Environmental Safety and Health
The project's Environmental Safety and Health program is the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Quality Assurance
The project's Quality Assurance program is the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Project Control
The project's project control activities are the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Contract Administration
The project's acquisition of equipment, supplies, and services is the responsibility for the Task Manager and will be performed with assistance from the Contract Administrator assigned to the Project.

3.2.2. Project Schedule
The project schedule is maintained by Project Control, which maintains the schedule and coordinates with the Waste Engineer(s).

3.2.3. Stop Work Action
All project team personnel have the authority to stop work for any condition adverse to safety or quality without fear of retaliation.

3.2.4. Project Documentation and Data
Project documentation will be maintained in accordance with site document control procedures. The documentation will include contractual records, official correspondence, operations logs, waste logs, sampling and analysis logs, self-assessments, audits, and records of treatment and disposal.

3.2.5. Sampling and Analysis
Sampling and analysis, if required, will be performed according to PL-3078, *FCP Waste Characterization Program Plan*, and specific sampling plans provided by the Project Team in accordance with PL-3048, *Prototype Sampling and Analysis Plan for Waste at the FCP*.

3.3. Health and Safety
The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Health and Safety programs and/or procedures.

3.4. Quality Assurance
The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Quality Assurance programs and/or procedures.

3.5. Radiological Protection

The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Radiological Protection programs and/or procedures.

3.6. Project Work Instructions

The Project Team will develop and approve work instruction and procedures in accordance with EW-1016, Waste Management Project Work Authorization Program.

3.7. Procurement

The projects required acquisition of equipment, materials, and services will be performed in accordance with all applicable Fluor Fernald procurement programs and/or procedures.

4. Processing and Handling Facility

This section describes the design of the Processing Facility to be established in Building 93A. The Waste Disposition Project has been given authorization to establish a waste processing and packaging enclosure in the east bay of Building 93A that currently houses the Garage and Laundry.

4.1. Design

The Processing and Handling Facility is a temporary enclosure installed in the east bay of Building 93A. The east bay of the building measures 30 feet wide by 55 feet long. The Enclosure occupies approximately 294 square feet and is located in the northwest corner of the work area inside of the east bay. It is constructed out of steel 8" metal studs placed approximately twenty-four inches on center running from floor to ceiling and covered with a heavy duty plastic sheeting commonly used in asbestos abatement work. The plastic sheeting is firmly attached to the enclosure frame so that it forms a barrier sufficient to control the release of radioactive contamination from within. Access to the work area inside the enclosure is gained through an opening equipped with Freezer Strips hanging vertically and overlapped approximately 2" from top to bottom. A drawing of the area is attached to this plan as Attachment 1.

A Satellite Clothing Area (SCA) is established adjacent to the enclosure and is stocked with appropriate levels of Personal Protective Equipment (PPE) as needed to support the safe and efficient completion of required work within the enclosure. Personnel working in the enclosure will don and doff PPE in this area.

4.2. Preparation

The Processing and Handling Facility is a temporary enclosure installed in the east bay of existing Building 93A. Equipment available for use in the facility on-site will be identified and staged for installation. Equipment that is not available on-site will be purchased and installed as required.

4.3. Checkout and Startup

When the facility installation is complete, a management assessment will be conducted to determine its readiness to start operations. A self-assessment checklist will be developed for the assessment. A team will be formed to conduct the assessment and determine readiness to start operations.

4.4. Operations and Maintenance

Like wastes will be processed in campaigns. Any secondary waste generated during the campaign will be packaged and staged for dispositioning to like waste streams for newly generated waste on-site. PPE, HEPA filters, floor coverings, and other secondary waste will be reviewed by the Waste Acceptance Organization to determine if it meets the WAC for onsite disposal. Project Waste Identification and Disposition (PWID) number 648 has been generated for the processing and secondary waste. This document identifies the characterization and management of these wastes and is included as Attachment 2.

Facility operations will be conducted according to governing procedures/work packages/work tickets/technical specifications. Maintenance will be performed according to procedures on equipment as needed to facilitate process operations. Routine maintenance such as lubrication and cleaning will be performed regularly in accordance with manufacturer instructions.

Supplies such as PPE, absorbent materials, housekeeping supplies, containers for overpacking and repacking will be kept on-site. Spare parts such as high efficiency particulate air (HEPA) filter elements, heating, ventilation, and air-conditioning (HVAC) parts, lights, air monitoring equipment, and radiation monitoring equipment will be available as needed.

4.5. Dismantling, Characterization, and Disposal

The Process and Handling Facility will be dismantled, characterized, and disposed of along with Building 93A. The D&D of this building is discussed in Amendment 3 of the Miscellaneous Small Structures Phase II Implementation Plan for Above Grade Decontamination and Dismantlement of Components 18Y and 93A. The enclosure will be dismantled for disposition on the OSDF provided that it meets the OSDF WAC. It is not anticipated that decontamination of the concrete will be required since there is very limited potential for releases of hazardous waste from this operation. However, a review of process operations will be conducted following completion of the blending process to determine if there were any significant releases of hazardous waste to the concrete. If so, the FCP will decontaminate the affected area with a solution of potable water. The rinsate will be analyzed for the constituents associated with the release to ensure that it meets Ohio EPA closure guidance levels. The slab will be dispositioned in the OSDF provided that it meets the OSDF WAC. Results from any sampling would be included in the task order completion report for Building 93A.

5. Management of Materials and Waste

5.1. Primary and Secondary Waste

During the project, two main types of waste will be managed: primary waste and secondary waste. Primary waste includes all waste containers described in Section 2. Secondary waste includes byproduct streams derived from processing the primary wastes.

To the greatest extent possible and consistent with the treatment subcontractors waste acceptance criteria, secondary waste will be accumulated, characterized, and dispositioned based on the attributes of the primary waste with which they are associated. Efforts will be made to prevent contamination of solid waste materials with mixed waste constituents. Uncontaminated solid wastes are managed separately and properly disposed by FCP site personnel.

All hazardous wastes generated from this process (including blended and secondary wastes) will be stored in HazStor lockers identified in the FCP's RCRA Part B Permit Application after generation until shipping.

Liquid wastes will be limited to triple rinse of the mixer and mill hopper. This rinse water will be collected, characterized to MEF 3912, managed as hazardous waste and disposed of at the Advanced Waste Water Treatment plant.

INV. NO.	[illegible]	TYPE	INVENTORY DESCRIPTION	CONT TYPE	TARE	NET	STATUS	PDS	SRC	C	MDC	SEQ	ITEM	[illegible]	[illegible]	[illegible]	Minimum blend ratio using 37 - 47% Safety Factor	[illegible]	[illegible]
W207183	2987	RCRA	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	110	228	390	ACTIVE	S093	240	0	062	0260	000002	0.94	11.3	2294.35	2.30	1.30	998
W207184	2987	RCRA	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	110	221	180	ACTIVE	S093	240	0	062	0260	000003	0.99	30.2	6457.97	6.50	5.50	994
W207823	20139	RCRA	SLUDGES, SALT, SOFT, CHLORIDE (FOR PLANT 8 RECOVERY)	085	174	178	ACTIVE	X888	FTA	0	044	S303	000001	0.835	38.7	6979.93	7.00	6.00	997
W233544	3913	RCRA	SCRAP SALTS, HIGH FLUORIDE, INCLUDING FLOOR SWEEPINGS	030	36	5	ACTIVE	R100	400	V	065	0499	000001	0.82	34.8	6163.78	6.25	5.25	986
W234484	3913	RCRA	SCRAP SALTS, HIGH FLUORIDE, INCLUDING FLOOR SWEEPINGS	055	73	178	ACTIVE	R100	400	V	065	0305	000004	0.802	27.1	4694.59	4.75	3.75	988
W514065	50364	RCRA	U3O8, +8 MESH - LOW FLUORIDE	085	137	833	ACTIVE	R094	824	0	122	4127	000001	0.943	69.17	14089.10	14.00	13.00	1006
W234711	10027	RCRA	SLUDGES, OILY	085	148	464	ACTIVE	R078	600	V	039	0447	000008	0.78	22.2	3740.26	3.00	2.00	1247
W234852	10027	RCRA	SLUDGES, OILY	085	133	380	ACTIVE	R078	600	V	039	0447	000006	0.73	18.3	2570.18	2.25	1.25	1142
W234882	10027	RCRA	SLUDGES, OILY	085	133	286	ACTIVE	R078	600	V	039	0447	000007	0.78	28.8	4852.22	4.00	3.00	1213

*Recommended blend ratio using 37 - 47% safety factor, waste type dependent

W233544 and W234484 can be blended together and then perform a final blend at a 4 to 1 ratio.

W207823 requires size reduction prior to blending.

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Primary Waste Processing

5.1.1. Waste Categorization

Primary wastes described in Section 2 will be campaigned into two groupings:

- Group 1 - Granular wastes containing little or no liquid/moisture that can be freely removed from their current waste storage container by pouring or dumping aided by the use of hand tools. Group 1 wastes may require size reduction by milling using a Straub Company Model 4-E mill. This mill was selected to provide a reasonable production rate while reducing the material to the same general particle size as the blending sand. The material then will be added to a mechanical mixer and blended with dry, general-purpose sand.

- Group 2 - Liquid/sludge waste containing organic constituents. These wastes are multiphase wastes that contain a solid phase, and an organic/aqueous liquid phase or both. This type of waste can be freely removed from their current waste storage container by pouring or dumping aided by the use of hand tools. Group 2 wastes require little or no preparation before blending/mixing and may be added to a mechanical mixer and blended with inert material, such as clean sand or absorbent material and a super absorbent such as Quick Solid 50 ™. Containers W234711, W2234852, and W234882 are Group 2. The remainders are Group 1.

Containers within the groups will not be commingled with the exception of W233544 and W234484, which will be combined.

5.1.2. Waste Processing Objective and Methodology

The objective of the project is to blend/mix the waste described in Section 2 with chemically compatible, non-radioactive material with similar physical properties to reduce the overall Uranium 235 concentration. The Uranium 235 concentration must be equal to or less than 1900 pico curies per gram (1900pCi/g U-235). 1900 pCi/g is the concentration-based limit for waste containing fissile material at Envirocare of Utah disposal facility. To ensure the final waste is $\leq$ 1900 pCi/g , a 37-47 % safety factor is included in the blend ratio (see attached Table 5.1 with blend info), which will result in a final waste with U-235 targeted at between 800 and1200 pCi/g . Blending/mixing will require the final waste form to be as homogeneous as possible so that the original waste material cannot be mechanically separated from the blending material. The final waste form must be blended/mixed so that, if sampled, the final waste will demonstrate uranium 235 concentration of $\leq$ 1900 pCi/g. has been achieved This demonstrates $\leq$ 1900 pCi/g on a mass balance basis, which requires no sampling. (See Table 5.1 for Blending Ratio) The project has chosen dry, general purpose sand as the blending medium.

The methodology used to achieve an overall concentration of uranium 235 in the waste of 1900pCi/g U-235 will be based on the physical characteristics of the waste. Some of the waste streams will require size reduction and/or granulation before being blended/mixed. Others will require little preparation before blending/mixing. This is why the project has determined to campaign the waste as discussed above. By whatever means the project

determines is needed to prepare the waste for blending/mixing, once the waste has been prepared for blending/mixing the blending material will be added.
Determining the amount of blending material to add to the waste will be accomplished using the net weight of the waste in each container, the percent Uranium and the percent Uranium 235 in the waste. With this information we can find the corresponding percent U-235 in the center column on the table below, then find the percent Uranium in the left hand column on the table below which corresponds to the maximum concentration of Uranium allowed in the waste in order to stay within the 1900pCi/g maximum concentration of U-235. Once the maximum Uranium concentration allowed in the waste has been determined, we will calculate the amount of blending material to be added to the waste to bring the concentration of Uranium in the waste down to the desired percentage in the table.

Table 5-2, U-235 Enrichments Below Limit of 1900 pCi/g

Maximum % Uranium	% U-235	Approximate pCi/g U-235
1	9	1900
2	4.5	1900
3	3	1900
4	2.2	1900
5	1.8	1900
6	1.5	1900
7	1.25	1900
8	1.07	1900
9	0.95	1900
10	0.85	1900
11	0.77	1900
12	No enrichment	>1900

Example:
Drum number W207184 has a net weight of 180 pounds, a uranium concentration of 30.2 percent, and a U-235 concentration of 0.986 percent.

Using Table 5-1 we see there is no reference for 0.986 percent U-235, so we round up to 1.07 percent U-235. The maximum Uranium concentration for the 1.07 percent U-235 waste is 8.0 percent at 1900 pCi/g U-235.

To find out how much blending material to add to this drum to reduce the Uranium concentration to 8.0 percent, we perform the following calculations:

(180 lbs. net weight * 30.2 % Uranium concentration) 54.36 net lbs. Uranium in the waste.

To find the multiplier that will give you the new net weight at 8.0% Uranium, you do the following:
(100% / 8%) = 12.5 is the multiplier to find the new net weight.

The waste will be blended in a small, electric concrete mixer. Waste and clean, dry, general purpose sand will be introduced to the mixer based upon the included blend recipe (Table 5.1) and blended until a homogenous product is achieved. A small grinder mill (Straub Company Model 4-E) has been procured to size-reduce the furnace salts and U_3O_8 material to a similar size as the sand.

The three Group 2 containers may be blended in their existing containers. Liquid will be absorbed with Quick Solid 50, a polymer absorbent material that is excellent for absorbing oils. Then dry sand will be stirred into the drum to achieve the required concentration of uranium to meet the TSDF WAC. The project will determine during the process whether use of the mixer will be more effective than hand mixing.

Cross-contamination will be avoided by sequencing the containers so the F-listed materials are performed last, with the sludges being the last of the F-listed. Containers will be worked one at a time, with the exception of W233544 and W234484, which are the same material and will be combined into one shipping container. Between containers of waste, the mixer will be triple rinsed with water. The water will be collected, characterized as MEF 3912, managed as hazardous waste and disposed of at the Advanced Waste Water Treatment plant. The feed hopper and grinder plates of the mill will also be triple rinsed.

5.2. Materials Management

5.2.1. Waste Minimization by Prevention of Contamination

Special precautions will be taken to prevent contamination (e.g. Radiological, Chemical) and in areas where spills on the buildings floor are possible, Herculite™ or equivalent floor covering will be used to provide a local contamination barrier. Otherwise the floors in the building will not be covered. It is not feasible to cover the entire floor of the enclosure. Fork truck traffic would destroy it. A Herculite™ e cover will be placed on the floor in the area where the source drum, destination drum, mill, and mixer are located. The floor covering will have a berm constructed of PVC pipe wrapped in Herculite™, or a temporary spill pallet may be used, depending on operations requirements. Only one drum at a time will be blended, so a large containment is not necessary. The covering will be reviewed by the Waste Acceptance Organization to assure it meets the Waste Acceptance Criteria for on-site disposal. If not, it will be disposed of at an off-site TSDF.

Also, to minimize potential waste materials brought into the packaging and handling facility exclusion zone, unwrapping, decontainerizing, or unpackaging of equipment (including tools and materials) will be done prior to entry into the packaging and handling facility. This will keep as much packing material as possible from becoming contaminated.

5.2.2. Prevention of Environmental Media Pollution

Potential discharges of pollutants to soil, surface water, ground water, and the atmosphere will be minimized by the following measures. For soil and ground water pollution prevention, project activities will be performed inside of Building 93A. Care will be exercised at all times to prevent spills from occurring inside or outside of the exclusion zone. When spills do occur, prompt response action by the Project Team will be take to

contain and clean up the spill, with all recovered materials being properly managed as recyclable materials or as waste.

A NESHAP Part 61 evaluation was performed and concluded that continuous air monitoring is not required. The evaluation is included in this Plan as Attachment 3.

There will be no liquid generated by the process with the exception of decontamination rinsate. Liquid in the three sludge drums (Group 2) will be absorbed with QuickSolid 50 or similar absorbent prior to blending.

5.2.3. Management of Facility Waste Containers

Primary waste in this project are described in Section 2. Secondary wastes will include used PPE which has exceeded its useful life, contaminated area isolation materials, HEPA filters, and uncontaminated solid wastes. The Project Team will manage all waste materials in cooperation with other FCP personnel, to minimize hazards to project personnel, other personnel at the FCP site, the public, and the environment.

5.2.4. Facility and Container Inspections

Inspections of waste in holding containers and equipment in the packaging and handling facility exclusion zone will be conducted. In accordance with regulatory requirements, container storage, staging, areas will be inspected when in use. Inspections in container storage or staging areas will include, but not be limited to, inspection of containers for leaks, damage, indications of overpressure, loose or illegible labels, aisle spacing, and waste compatibility. The presence and accessibility of adequate quantities of emergency response equipment will be verified.

Process equipment will be inspected for any mechanical or electrical conditions that could cause and accident or emergency or render the equipment inoperable if not corrected. If such a condition is found, the equipment will immediately be tagged out of service, and maintenance or repairs will be initiated.

5.2.5. Spill Response

Any time a leaking container or spill results in an accumulation of dry mixed wastes in process equipment or on the floor, immediate action will be taken to contain, clean-up, and package the materials in question. Project Team personnel will perform any spill response and housekeeping within the exclusion zone in accordance with applicable site procedures. In the event of a large spill or a spill that causes a condition immediately dangerous to life and health (IDLH), Project and other site personnel will evacuate the exclusion zone, notify the Fluor Fernald Assistant Emergency Duty Officer (AEDO) and stay outside the exclusion zone until allowed to return by the AEDO. Spill material will be containerized and evaluated for return to the blending process.

5.2.6. Management of Secondary Waste

Secondary waste will be segregated into separate containers by category so that they may be managed as efficiently as possible. The most significant secondary waste stream will be PPE. At each break, personnel in the exclusion zone will pass through a dress out area

where PPE will be doffed. Separate plastic lined collection drums for protective clothing, used respirators, outer booties, and disposable items (e.g., gloves, tape, filter cartridges, etc..) will be provided at the egress station. Project personnel will manage these accumulated secondary wastes. Project personnel will also manage the segregation and handling of PPE.

5.3. Materials Management

Non-waste materials such as equipment, spare parts, and consumable supplies will be managed to prevent emergency situations from spills or releases, and to prevent project delays due to shortage of Critical supplies. Supplies will be received, handled, processed, and stored in accordance with applicable site procedures. Regular periodic inspections of both the storage area and the inventories will be made.

6. Waste Treatment

6.1. Commercial Treatment

The waste in this project will be treated to meet Land Disposal Restriction (LDR) treatment standards found in 40 Code of Federal Regulations (CFR) Part 268, by Envirocare of Utah, under the Vacuum Thermal Desorption Contract (Contract Number 02FF1064). Envirocare of Utah has within its LLMW treatment facilities a robust treatment train that is designed to handle LLMW with waste codes assigned to the waste herein. Envirocare of Utah will perform all waste treatment activities under their commercial permits and licenses and in accordance with Federal, State and local laws and regulations.

6.2. Certificate of Treatment

The required certificate of treatment will be acquired from Envirocare of Utah and will be determined to meet the needs of the project. It will become part of the project record file.

7. Waste Disposal

7.1. Commercial Disposal

The waste in this project will be disposed of by Envirocare of Utah, under the Vacuum Thermal Desorption Contract (Contract Number 02FF1064). Envirocare of Utah has a LLMW disposal facility. Envirocare of Utah will perform all waste disposal activities under their commercial permits and licenses and in accordance with Federal, State and local laws and regulations.

7.2. Certificate of Disposal

The required certificate of disposal will be acquired from Envirocare of Utah and will be determined to meet the needs of the project. It will become part of the project record file.

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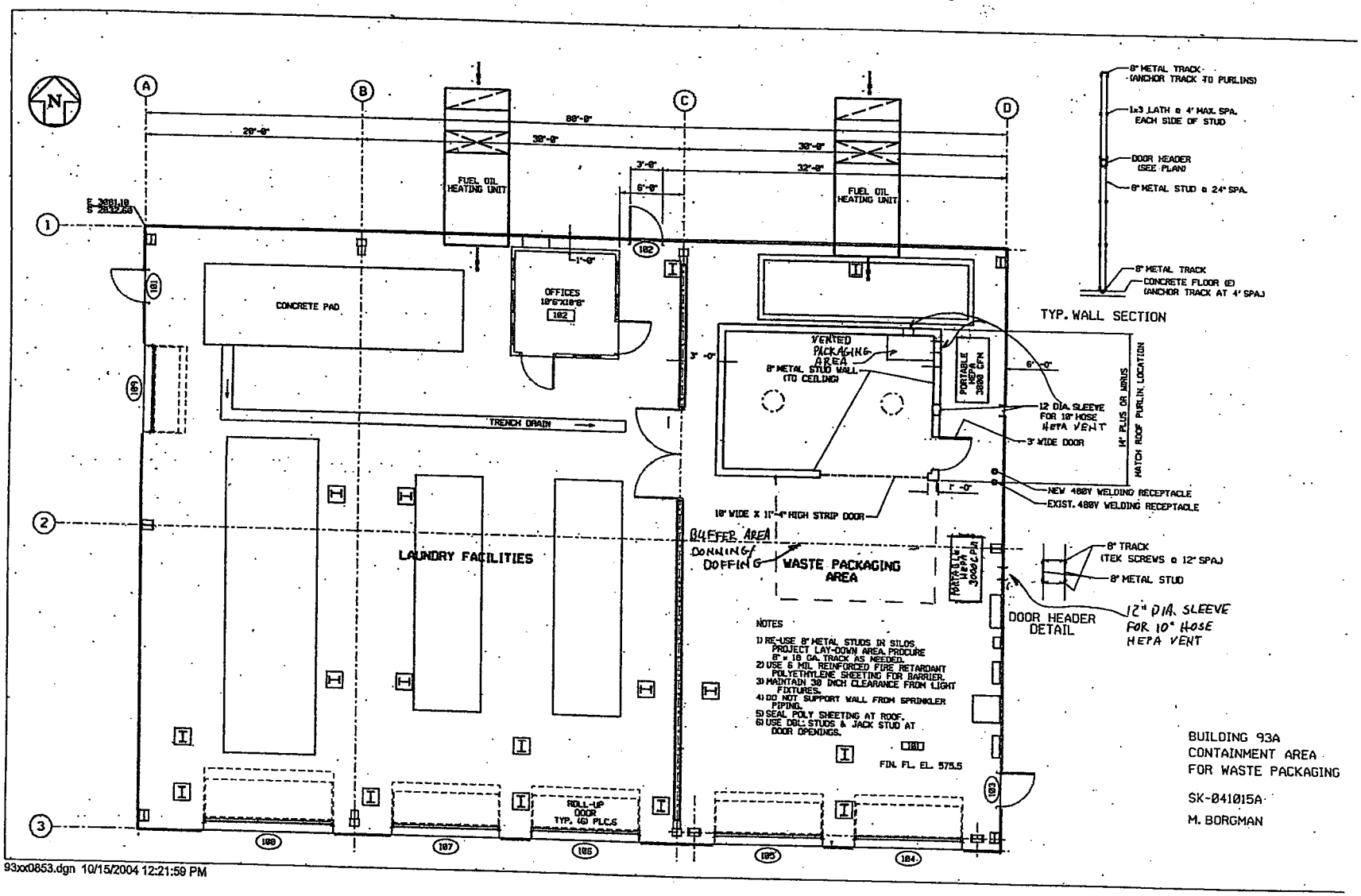
ATTACHMENT 1:
LAYOUT OF BUILDING 93A


N
A
B
C
D
1
2
3
88'-0"
29'-6"
30'-6"
32'-6"
32'-6"
3'-6"
6'-6"
FUEL OIL HEATING UNIT
FUEL OIL HEATING UNIT
OFFICES 18'6"X18'6" 192
1'-0"
CONCRETE PAD
TRENCH DRAIN
VENTED PACKAGING AREA
8" METAL STUD WALL (TO CEILING)
3'-0"
PORTABLE HEPA 3000 CFM
6'-0"
12 DIA. SLEEVE FOR 10" HOSE HEPA VENT
3' WIDE DOOR
14" PLUS OR MINUS HATCH ROOF PURLIN LOCATION
1'-0"
NEW 480V WELDING RECEPTACLE
EXIST. 480V WELDING RECEPTACLE
18' WIDE X 11'-4" HIGH STRIP DOOR
BUFFER AREA
DONNING/ DOFFING
WASTE PACKAGING AREA
PORTABLE HEPA 3000 CFM
LAUNDRY FACILITIES
ROLL-UP DOOR TYP. (6) PLCS
FIN. FL. EL. 575.5
NOTES
1) RE-USE 8" METAL STUDS IN SILOS. PROJECT LAY-DOWN AREA. PROCURE 8" x 18 GA. TRACK AS NEEDED.
2) USE 6 MIL REINFORCED FIRE RETARDANT POLYETHYLENE SHEETING FOR BARRIER.
3) MAINTAIN 30 INCH CLEARANCE FROM LIGHT FIXTURES.
4) DO NOT SUPPORT WALL FROM SPRINKLER PIPING.
5) SEAL POLY SHEETING AT ROOF.
6) USE DBL. STUDS & JACK STUD AT DOOR OPENINGS.
8" METAL TRACK (ANCHOR TRACK TO PURLINS)
1x3 LATH @ 4' MAX. SPA. EACH SIDE OF STUD
DOOR HEADER (SEE PLAN)
8" METAL STUD @ 24" SPA.
8" METAL TRACK
CONCRETE FLOOR (E) (ANCHOR TRACK AT 4' SPA.)
TYP. WALL SECTION
8" TRACK (TEK SCREWS @ 12" SPA.)
8" METAL STUD
12" DIA. SLEEVE FOR 10" HOSE HEPA VENT
DOOR HEADER DETAIL
BUILDING 93A
CONTAINMENT AREA
FOR WASTE PACKAGING
SK-041015A
M. BORGMAN
93xx0853.dgn 10/15/2004 12:21:59 PM

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ATTACHMENT 2

PWID 648

02 MAR 2005 **PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT**

C 5 8 5

Project Summary Information

Project #:	Project Name:	Date:	Prepared By:	Rev.:	OU:
648	URANIUM ASSAY ADJUSTMENT PROJECT	01 FEB 2005	V. HUFF	0	

Project Description:
ONE TIME PROCESSING OF SLIGHTLY ENRICHED MIXED LOW-LEVEL WASTE FOR SHIPMENT TO AN OFF-SITE TSDF FOR FURTHER TREATMENT OF RCRA CONSTITUENTS. PROJECT WILL INCLUDE ALL MATERIALS GENERATED DURING THE BLENDING OF THESE WASTES, INCLUDING PPE, AREA ISOLATION MATERIALS, "RCRA EMPTY" DRUMS, DECONTAMINATION WATERS, HEPA FILTERS AND UNCONTAMINATED SOLID WASTES. BLENDING ACTIVITIES WILL TAKE PLACE IN BUILDING 93A.

Waste Stream Identification and Disposition

Profile	MTL Name	Bulk Vol (cu yd)	Weight (lbs)	OSDF WAC	Disposition Comment
2987	BHO-001		570.00		DUST, DUST COLLECTOR BAGS, AND DUST COLLECTOR RESIDUE FROM TRANE INCINERATOR FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
3912	043427				DECON WATER FROM PROCESS EQUIPMENT IN THE URANIUM ASSAY ADJUSTMENT PROJECT
3913	BHO-001		833.00		POWDER/DIRT POSSIBLY GENERATED BY A DUST COLLECTOR OR VACUUM CLEANER FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
10027	BHO-001		178.00		INSOLUBLE OIL AND SLUDGES FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
20139	BHO-001		183.00		SOFT SALT SLUDGES FROM RMI OPERATIONS FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
50364	BHO-001		1,130.00		U3O8, +8MESH FROM ROTEX SCREENING OPERATIONS FOR SHIPMENT TO AN OFF-SITE TSDF MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
80094	BHO-001	2		PW	ITEMS CLASSIFIED AS 'ABOVE OSDF WAC' REQUIRING DIRECT HAUL TO WPRAP INCLUDING BUT NOT LIMITED TO CRUSHED "RCRA EMPTY" DRUMS
92000	BHO-001			YW	HEPA FILTERS - DATA MUST BE AVAILABLE TO ENSURE THAT FILTERS MEET OSDF WAC
92023	BHO-001	2		YW	PLACE BAGGED COMPRESSIBLE TRASH IN ROLL OFFS FOR OSDF DISPOSAL
92101	BHO-001			YW	PLACE NON-COMPRESSIBLE DEBRIS IN ROLL-OFFS FOR OSDF DISPOSAL

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PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT

Comments
NOTE 1: ALL WASTE ACCEPTANCE CRITERIA, INCLUDING SIZE, MUST BE MET FOR WASTE PROFILE 92000. NOTE 2: ALL DECONTAMINATION WATERS MUST BE MANAGED IN COMPLIANCE WITH WASTEWATER DISPOSAL RESTRICTIONS.

Approvals:		
1. Waste Acceptance Organization Section Lead: **MIKE RAMIREZ**	Date:	Comments:
2. Waste Acceptance Organization Manager: **SCOTT OSBORN**	Date:	Comments:
3. Radiological Engineering: **COREY FABRICANTE**	Date:	Comments:
4. Soil and Disposal Facility Project Director: **N/A**	Date:	Comments:
5. Environmental Compliance: **FRANK JOHNSTON**	Date:	Comments:
6. Generator Project Representative: **STEVE HEFFRON**	Date:	Comments:

1,2,3,6 - Complete for all projects
4 - Required when soil is generated or the project involves work being done at or below grade
5 - Required when material is being free-released.

ATTACHMENT 3:
NESHAP SUBPART H EVALUATION OF THE URANIUM ADJUSTMENT PROJECT

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January 26, 2005

To: John Samples
Fm: Phillip Spotts

Subj: NESHAP Subpart H evaluation of the Uranium adjustment Project

1. Using the information provided in the UAP work plan I modeled a highly conservative scenario to estimate air emissions and potential dose for the source.
   a. I assumed that all the material in the drums has the potential to become airborne. This is not realistic as a great portion of the material consists of material like firebrick, filter bags, trash, etc. Making this assumption though allows us to state with confidence that the resulting dose estimates are higher than what is actually expected.
   b. I have assumed that 0.1% of the processed material becomes airborne. I assumed this for all drums except for the oily sludge drums, for those I assumed a 0.01% emission rate. Again this is probably high for the oily sludge but allows us to estimate some emissions and not zero.
   c. We assume there are no pollution control equipment available for this process. This is a requirement of the NESHAP. We have to use potential emissions and not actual.

2. Given the above assumptions I ran the CAP88PC model with the following results: The highest fence line dose estimate was **0.019 mRem.** This is well below the NESHAP standard of 0.1 mRem used to determine if continuous monitoring is required for this source. **Continuous monitoring is not required under NESHAP**

If you have any questions please give me a call at 648-5295.

Phillip Spotts
Environmental Compliance

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Jan 24, 2005 10:58 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 2002

Comments: URANIUM ADJUSTMENT PROJECT
Building 93A

Dataset Name: U ADJ PRJ
Dataset Date: Jan 24, 2005 10:57 am
Wind File: WNDFILES\5YRCAP88.WND

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.94E-04
BREAST	3.33E-04
R MAR	2.77E-03
LUNGS	3.07E-01
THYROID	2.86E-04
ENDOST	3.54E-02
RMNDR	3.24E-03
EFFEC	3.94E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.26E-03
INHALATION	3.69E-02
AIR IMMERSION	5.58E-09
GROUND SURFACE	1.79E-04
INTERNAL	3.92E-02
EXTERNAL	1.79E-04
TOTAL	3.94E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-238	3.15E-02
U-235	7.91E-03
TOTAL	3.94E-02

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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.65E-09
BONE	1.95E-09
THYROID	1.06E-10
BREAST	1.09E-09
LUNG	4.96E-07
STOMACH	5.57E-10
BOWEL	4.56E-10
LIVER	5.73E-10
PANCREAS	3.60E-10
URINARY	6.92E-09
OTHER	4.41E-10
TOTAL	5.12E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.24E-08
INHALATION	4.96E-07
AIR IMMERSION	1.30E-13
GROUND SURFACE	4.18E-09
INTERNAL	5.08E-07
EXTERNAL	4.18E-09
TOTAL	5.12E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	4.08E-07
U-235	1.04E-07
TOTAL	5.12E-07

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	700	721	817	1118	1144	1151	1155
N	1.4E-02	1.3E-02	1.0E-02	5.8E-03	5.6E-03	5.5E-03	5.5E-03
NNW	9.9E-03	9.3E-03	7.4E-03	4.2E-03	4.1E-03	4.0E-03	4.0E-03
NW	9.3E-03	8.8E-03	6.9E-03	4.0E-03	3.8E-03	3.8E-03	3.8E-03
WNW	1.2E-02	1.1E-02	8.9E-03	5.0E-03	4.8E-03	4.8E-03	4.8E-03
W	1.9E-02	1.8E-02	1.4E-02	7.9E-03	7.6E-03	7.5E-03	7.5E-03
WSW	2.0E-02	1.9E-02	1.5E-02	8.4E-03	8.1E-03	8.0E-03	8.0E-03
SW	1.1E-02	1.0E-02	8.0E-03	4.6E-03	4.4E-03	4.4E-03	4.3E-03
SSW	9.6E-03	9.0E-03	7.2E-03	4.1E-03	4.0E-03	3.9E-03	3.9E-03
S	9.5E-03	9.0E-03	7.1E-03	4.1E-03	4.0E-03	3.9E-03	3.9E-03
SSE	1.7E-02	1.6E-02	1.2E-02	7.0E-03	6.7E-03	6.7E-03	6.6E-03
SE	2.8E-02	2.6E-02	2.0E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02
ESE	3.5E-02	3.3E-02	2.6E-02	1.4E-02	1.4E-02	1.4E-02	1.4E-02
E	3.8E-02	3.6E-02	2.8E-02	1.6E-02	1.5E-02	1.5E-02	1.5E-02
ENE	3.9E-02	3.7E-02	2.9E-02	1.6E-02	1.6E-02	1.6E-02	1.5E-02
NE	3.6E-02	3.4E-02	2.7E-02	1.5E-02	1.4E-02	1.4E-02	1.4E-02
NNE	2.4E-02	2.3E-02	1.8E-02	1.0E-02	9.8E-03	9.7E-03	9.7E-03

	Distance (m)				
Direction	1190	1254	1318	1380	1443
N	5.2E-03	4.8E-03	4.4E-03	4.1E-03	3.8E-03
NNW	3.8E-03	3.5E-03	3.2E-03	3.0E-03	2.8E-03
NW	3.6E-03	3.3E-03	3.0E-03	2.8E-03	2.6E-03
WNW	4.5E-03	4.2E-03	3.8E-03	3.5E-03	3.3E-03
W	7.1E-03	6.5E-03	6.0E-03	5.5E-03	5.1E-03
WSW	7.6E-03	7.0E-03	6.4E-03	5.9E-03	5.5E-03
SW	4.1E-03	3.8E-03	3.5E-03	3.3E-03	3.0E-03
SSW	3.7E-03	3.4E-03	3.2E-03	2.9E-03	2.7E-03
S	3.7E-03	3.4E-03	3.2E-03	2.9E-03	2.7E-03
SSE	6.3E-03	5.8E-03	5.3E-03	4.9E-03	4.6E-03
SE	1.0E-02	9.4E-03	8.6E-03	8.0E-03	7.4E-03
ESE	1.3E-02	1.2E-02	1.1E-02	1.0E-02	9.3E-03
E	1.4E-02	1.3E-02	1.2E-02	1.1E-02	1.0E-02
ENE	1.5E-02	1.3E-02	1.2E-02	1.1E-02	1.1E-02
NE	1.4E-02	1.2E-02	1.1E-02	1.1E-02	9.8E-03
NNE	9.2E-03	8.4E-03	7.8E-03	7.2E-03	6.7E-03

Container	wt. Material lbs		U238(%)	U238(lbs)	U235(%)	U235(lbs)
W207183	390		0.113	44.07	0.00942	3.6738
W207184	180		0.302	54.36	0.00986	1.7748
W207823	178		0.2	35.6	0.0125	2.225
W233544	5		0.387	1.935	0.0082	0.041
W234484	178		0.387	68.886	0.0082	1.4596
W514065	833		0.271	225.743	0.00802	6.68066
		Total		430.594		15.85486
W234711	464		0.216	100.224	0.00802	3.72128
W234852	380		0.163	61.94	0.00726	2.7588
W234882	286		0.288	82.368	0.00775	2.2165
		Total		244.532		8.69658
		Released		0.455047		0.016725
		(grams)		206.406		7.586114

Specific Activity

		Ci/yr
U238	3.33E-07 Ci/gm	6.87E-05
U235	2.14E-06 Ci/gm	1.62E-05

Assumptions

- .1% of material is releassed during processing except oily sluges released at .01%
- No pollution control equip exists.

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Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246
(513) 648-3155

MAR 2 4 2005

Mr. Paul Pardi, RCRA Group Leader and FFCA Project Manager
Ohio Environmental Protection Agency
Division of Hazardous Waste Management
401 East 5th Street
Dayton, Ohio 45042-2911

DOE-0201-05

Dear Mr. Pardi:

REVISED WORK PLAN FOR THE URANIUM ADJUSTMENT PROJECT

Enclosed for your formal review and approval is the Revised Work Plan for the Uranium Assay Adjustment Project. The plan has been revised in response to Ohio Environmental Protection Agency (OEPA) comments. The comments and responses are also attached. The proposed changes were reviewed informally by OEPA and found to be acceptable.

Please provide us your approval on this final document. If you have any questions regarding this information, please contact Ed Skintik at (513) 246-1369.

Sincerely,

for William J. Taylor
Director

Enclosure: As Stated

cc w/enclosure
J. Saric, USEPA-V, SR-6J
T. Schneider, OEPA-Dayton (3 copies of enclosure)
M. Cullerton, Tetra-Tech
K. Alkema, Fluor Fernald, Inc./MS01
J. Samples, Fluor Fernald, Inc./MS52-3
AR Coordinator, Fluor Fernald, Inc./MS78

cc w/o enclosure:
J. Sattler, OH/FCP
R. Schulten, Fluor Fernald, Inc./MS52-3

RESPONSE TO COMMENTS - UPDATE

General Comments

1. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: Describe how and when the Process and Handling Facility will be dismantled, characterized, and disposed? Will the concrete be deconned? Describe decon efforts. Describe sampling requirements for the structure, and rinsate collection of the concrete in the Work Plan.

Fernald Response: Building 93A will be dismantled and disposed by the D&D forces. Current schedule is late summer 2005 . Work will be executed following their normal processes concerning debris characterization, decontamination, and rinsate collection, sampling, and disposal. The area directly under the working drum and the mixer will be covered with herculite to minimize any contamination to the concrete floor.

OEPA Follow up Comment: OEPA Response: Define "normal processes". Incorporate into the Work Plan. Ohio EPA needs assurances that waste characterization activities will be consistent with the requirements in OAC 3745-52-11, and that "decon" activities will be consistent with OAC 3745-66-11 and 14.

Fernald Follow up Response: See Section 4.5, page 21 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

2. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: How will PPE and if generated spill material be collected, characterized, and disposed? How will HEPA filters be collected, characterized, and disposed?

Fernald Response: PPE will be reviewed by Waste Acceptance Organization to determine if it meets the WAC for onsite disposal. If not, it will be containerized and disposed of through the treatment vendors and process selected for the associated waste.

OEPA Followup Comment: Spills and HEPA filters? What does "process selected for the associated waste" mean? Incorporate into the Work Plan. Ohio EPA needs assurances that waste characterization activities will be consistent with the requirements in OAC 3745-52-11.

Fernald Follow up Response: See Section 4.4, page 21 and Section 5.1, page 22 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

3. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: Where will blended wastes and secondary wastes be stored after generation and before shipping?

Fernald Response: Blended and secondary wastes will be stored in HazStor lockers until shipment.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1, page 22 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

4. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: What steps are in place to ensure no cross contamination occurs between separate waste streams to ensure that the wastes won't require recharacterization?

Fernald Response: The containers will be blended one at a time. The blending mixer will be cleaned after each MEF is completed.

OEPA Follow up Comment: Define cleaning procedures and cleaning agents to be used including the determination of cleaning agent. Explain how the waste cleaning materials and agents will be disposed of. Explain what steps are in place to ensure no cross contamination occurs between separate waste streams to ensure that the wastes won't require recharacterization? Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1.2 page, 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

5. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: The plan fails to document any mitigative measures to keep air emissions ALARA. Provide a plan describing how air handling will be accomplished.

Fernald Response: The enclosure in Building 93A is ventilated by two 3000 CFM HEPA units. These filtration units will eliminate any emissions to the atmosphere.

OEPA Follow up Comment: Provide building plan drawings identifying the location of HEPA units, doors, windows and other openings. Identify how all of these openings will be controlled. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 4.1, page 20 and Attachment 1 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

6. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: Provide a NESHAPs (Part 61) evaluation to estimate air emissions and dose for this project. This evaluation needs to be performed to see if NESHAPs applies.

Fernald Response: NESHAP Part 61 evaluation is attached. Per the evaluation, continuous monitoring is not required.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Attachment 3 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

7. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: The plan generally provides no details on what equipment/methods will be used to blend the wastes. Provide this information.

Fernald Response: The waste will be blended in a small electric concrete mixer. Waste and clean sand will be introduced into the mixer based upon the blend recipe developed for each container of waste and mixed until a homogenous blend is achieved. A small grinder mill has been procured to size-reduce the furnace salts and the U3O8 material to a similar size as the sand.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

8. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: For Group 1, how and when will it be decided which method (shredding, granulation, solvent, or hot water) to use on each waste? Identify the solvent to be used for Group 1 for each waste. Can hot water be used solely? How will the solvent affect the characterization of the blended waste? Provide a detailed description of the process for adding solvent including how and when this will be done and where. How was compatibility determined for the solvent?

Fernald Response: Further inspection has revealed that there are no containers that do not appear to be readily emptied. The container that was suspect for this has been disposed of. No hot water or solvents will be required.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

9. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: na Pg. #: na Line: na Code: C

Original OEPA Comment: Identify the material to be used as blend material for each waste? How was compatibility determined for the blend material?

Fernald Response: The material will be mixed with clean, inert sand. No solvents or water will be used.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 1.0 and 1.1, page 7; 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

Comments

1. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: 5.2.1. Pg. #: na Line: na Code: C

Original OEPA Comment: Identify which Group each of the waste streams fall into and indicate what solvent will be used.

Fernald Response: No solvent will be used. Containers W234711, W234852, and W234882 are Group 3, Sludges. The remainder are Group 2, Granular wastes with little or no liquid.

OEPA Follow up Comment: Okay, since no solvent will be used. Remove references to addition of solvent from the Work Plan.

Fernald Follow up Response: See Section 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

2. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: 5.3.1 Pg. #: na Line: na Code: C

Original OEPA Comment: Is it feasible to cover the entire floor with covering. How is it determined which sections are covered and which are not? How will the covering be collected, managed, characterized, and disposed? How will the contaminated packaging be collected, characterized and disposed?

Fernald Response: It is not feasible to cover the entire floor of the enclosure with covering. Fork truck traffic would destroy it. A herculite cover will be placed on the

floor in the area where the source drum, destination drum, mixer, and mill are located. The covering will be reviewed by Waste Acceptance Organization to see if it meets the WAC for on-site disposal. If not, it will be disposed of at an off-site treatment vendor after proper characterization using Fluor Fernald characterization procedures

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

3. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: 5.3.2 Pg. #: na Line: na Code: C

Original OEPA Comment: Describe the secondary containment to be used?

Fernald Response: The herculite floor covering will have a berm constructed of PVC pipe wrapped in the herculite, or a temporary spill pallet berm may be used, depending upon operations requirements. As stated above, only one drum at a time will be blended, so a large containment is not necessary.

OEPA Follow up Comment: Okay. Incorporate into the Work Plan.

Fernald Follow up Response: See Section 5.1.2, page 26 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

4. Commenting Organization: Ohio EPA Commentor: DHWM
Section #: 5.3.2 Pg. #: na Line: na Code: C

Original OEPA Comment: The Work Plan states that every effort will be made to collect liquids. When would it not be collected and what would be its disposition when it isn't? Collected liquids should be recharacterized if potentially in contact with other wastes. Describe the characterization process.

Fernald Response: There should be no liquid generated by or required for this process.

OEPA Comment: Unless DOE/Fluor can state that liquids will not be generated by the process, DOE/Fluor must describe the process for collecting and characterizing any liquids generated.

Fernald Follow up Response: See Section 5.1.2, page 22; Section 5.1.2, page 26; Section 5.2.2, page 27 of "Final Uranium Assay Adjustment Project Work Plan", March 2005.

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FLUOR FERNALD, INC.
SILOS PROJECT

URANIUM ASSAY ADJUSTMENT PROJECT WORK PLAN

Prepared by Fernald Closure Project
March 2005

40600-PL-0001
Revision 02

Prepared for
U. S. Department of Energy
Contract DE-AC24-01 OH20115

5880

Work Plan for the Uranium Assay Adjustment Project

Dennis Carr
Silos Project, Director

3-10-05
Date

Bob Schulten
Silos Project Shipping & Receiving, Manager

3-10-05
Date

John Samples
Silos Project Operations

3-10-05
Date

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Work Plan for the Uranium Assay Adjustment Project

Revision History

Revision	Date	Reason
1	11/11/04	Incorporated comments from Blue Sheet Review
2	03/04/05	Incorporated comments from Ohio EPA

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Work Plan for the Uranium Assay Adjustment Project

TABLE OF CONTENTS

Work Plan for the Uranium Assay Adjustment Project

LIST OF ACRONYMS

ACA	Amendment Consent Agreement
AEDO	Assistant Emergency Duty Officer
AWWT	Advance Waste Water Treatment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
HEPA	High-Efficiency Particulate Air (filter)
HVAC	Heating Ventilation and Air Conditioning
HWMU	Hazardous Waste Management Unit
IDLH	Immediate Dangerous to life and Health
LLW	Low-Level Waste
MDC	Major Diagnostic Category
MEF	Material Evaluation Form
MC&A	Material Control and accountability
CFR	Code of Federal Regulations
MLLW	Mixed Low-Level Radioactive and Hazardous Waste
OAC	Ohio Administrative Code
PBS	Performance Baseline Summary
PCB	Polychlorinated Biphenyl (s)
PPE	Personal Protective Equipment
PPM	Parts Per Million
PWID	Project Waste Identification and Disposition
RACM	Reasonably Available Control Measures
RCRA	Resource Conservation and Recovery Act.
RMI	Reactive Metals Incorporated
SAP	Sampling and Analysis Plan
TC	Target Concentration
TCA	1,1,1, Trichloroethane
TSCA	Toxic Substance Control Act
TSDF	Treatment Storage and Disposal Facility (RCRA)
WBS	Work Breakdown Structure
WAO	Waste Acceptance Organization
WAC	Waste Acceptance Criteria

1. INTRODUCTION

This work plan describes the objectives and scope of work for the Fluor Fernald, Inc. (Fluor Fernald) Uranium Assay Adjustment Project to be conducted at the U. S. Department of Energy (DOE) Fernald Site. The Fernald site, also known as the Fernald Closure Project (FCP), is a government owned, former uranium processing facility located near Cincinnati, Ohio. The site was placed on the National Priorities List in 1989 and is currently undergoing remediation under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) in accordance with the 1991 *Amended Consent Agreement (ACA)* between the DOE and the U. S. Environmental Protection Agency (EPA).

The waste to be processed and disposed of in the Uranium Assay Adjustment project is currently stored in nine containers. The waste is comprised of Dust Collector Residues, Chloride Salt Sludges, Scrap Salts High Fluoride, U_3O_8 (Black Oxide) High Fluoride, Scrap U_3O_8 (Black Oxide) and Oily Sludges/Grease. The waste has a multitude of chemical and physical forms and will be blended with dry, general purpose sand to achieve the desired uranium concentration adjustment.

1.1. Objectives

Provide for the one time processing of slightly enriched mixed low-level waste (MLLW) so that Fluor Fernald can ship it to an approved off-site Treatment Storage and Disposal Facility (TSDF) for further treatment of the RCRA constituents to meet land disposal restrictions (LDR) requirements in accordance with applicable Federal, State and local regulations. The waste contains a combined uranium mass of 507.199 kilograms having enrichment range between 0.71 73 and 0.99 percent U-235. The MLLW are currently stored in nine containers and in its present form the waste does not meet applicable radiological waste acceptance criteria at any of our approved TSDF's. The project will develop an acceptable method for mixing / blending the MLLW with dry, general purpose sand to adjust the enrichment level of the MLLW to meet the radiological waste acceptance criteria at an approved TSDF.

An on-site processing facility will be set up in Building 93A for processing this waste and preparing it for shipment to an approved treatment and disposal provider under contract with Fluor Fernald, Incorporated. Accomplishing the project will require participation from Project Support Departments, Project Management, and Operations.

1.2. Organization of the Work Plan

This project work plan has been organized to match the Work Breakdown Structure of the Project. The plan identifies the parties responsible for each activity including its management and control. Section 2.0 of the Work Plan provides a description of the waste to be processed and dispositioned in terms of the Material Evaluation Form (MEF) characterization process. Section 3.0 describes the planning that is required for the job and defines how the planning is documented herein. Section 4.0 describes the packaging and handling facility and the activities that must be accomplished to prepare the facility for use by the project. Section 5.0 describes the management of materials and waste that is to be performed for each of the unique waste streams. Section 6.0 describes project activity to overview and provide direction and control of the treatment activities of the subcontractor. Section 7.0 describes project activity to overview and provide direction and control of the disposal activities of the disposal site.

2. DESCRIPTION OF THE WASTE

There are nine containers of waste to be processed in this project. The following is a description of each container:

Container Number W207183 and W207184

The material in these drums is described as Dust Collector Residues and is characterized under MEF 2987.

Figure 2.1 - W207183 Contents

Figure 2.2 – W207184 Contents

Determination

RCRA Hazardous, Low-Level Radioactive Waste: F002, D008

Descriptive Name

Dust, dust collector bags, and dust collector residue from the Trane incinerator.

Process Generating the Waste

This waste was generated during Safe Shutdown activities when the Trane incinerator ancillary equipment was cleaned out. The Trane incinerator was part of HWMU #28, and was characterized as F002 and D008. The HWMU has not been clean closed, there are no available records indicating the dust collectors had been cleaned previously, and there are no analytical results available for this material to indicate that no F002 or D008 waste was a part of this waste stream. Therefore, this dust collector material is obliged to be characterized the same as the HWMU. Thus, this waste is characterized as F002 and D008 RCRA hazardous low-level radioactive waste. According to the verification forms, the residue was scraped and vacuumed from the baghouse, the hopper, and the plenum of the G2-95 dust collector. The bags, of course, originate from the baghouse.

Radiological/Chemical Composition

Analytical data collected in July 2004, shows a uranium concentration of 113000 ug/g or 11.3% and a U235 concentration of 0.942% for container number W207183, and a uranium concentration of 302000 ug/g or 30.2% and a U235 concentration of 0.986% for container number W207184.

Hazardous Waste Listings and Characteristics

Listings – The waste comes from the Trane incinerator, which was part of HWMU #28 and which has an F002 listing for 1,1,1-TCA. This listing will also apply to the waste managed under this MEF. This waste does not meet the listing descriptions for K, P, or U-listed wastes per 40 CFR 261.32 and 261.33.

Characteristics – This material is not a liquid or a gas and thus is not ignitable or corrosive as defined in 40 CFR 261.21 and 261.22. The material is also not expected to be unstable or reactive as defined in 261.23.

The waste comes from the Trane incinerator, which was part of HWMU #28 and which carries the D008 toxicity characteristic for lead. Unless sampling is performed to refute exceeding the regulatory level for lead, the D008 characteristic will remain associated with this waste.

TSCA Regulated PCB or Asbestos Waste, and OAC Infectious Waste

This waste stream is not expected to have PCBs, asbestos, or infectious wastes associated with it.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution

MDCs 029, 033, and 062 are not identified in SA-9601916 or RM-0005 as being pyrophoric or gas generating. They are also not expected to be combustible or reactive. See form FS-F-5716: *Determination of Pyrophoricity, Gas Evolution, Combustibility, and Reactivity of Containerized Wastes and Nuclear Materials* for further information.

Container Number W207823

The material in this drum is described as Sludges, Salt, Soft, chloride and is characterized under MEF 20139.

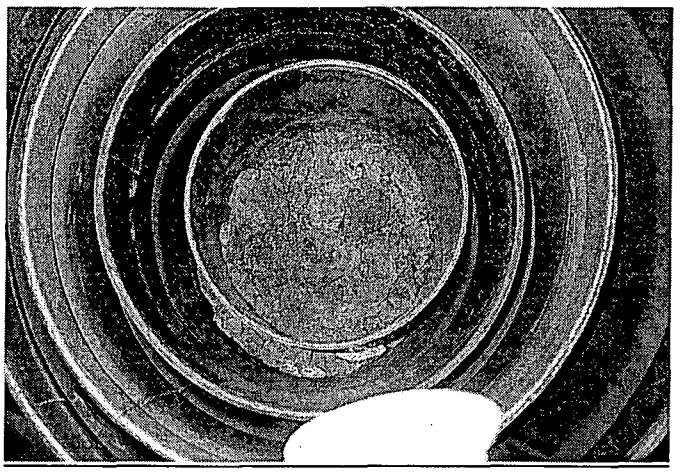

Figure 2.3 – W207823 Contents

Determination

RCRA hazardous, low-level radioactive waste: D005 (barium)

Descriptive Name

This material is various wastes and samples from RMI operations that are hazardous for barium.

Process Generating the Waste

The RMI facility, located in Ashtabula, Ohio, was where uranium metal shapes were extruded. The uranium metal was processed in a molten salt bath (usually barium chloride) to facilitate the extrusion process. The salt baths were heated to approximately 1100 °F and were used to make the uranium malleable enough to extrude. The baths were emptied occasionally in order to replace the salt and refurbish the worn out bricks within the salt bath. As a result of this process, wastes with concentrations of barium that exceed the regulatory limit were generated.

This MEF manages various wastes and samples of waste that are RCRA hazardous for barium and that were generated from RMI processes. Examples of waste include, but are not limited to:

- Furnace bricks that lined the salt bath
- Pieces of graphite from the extrusion press
- Rock, dirt, floor sweepings, trash, and concrete from RMI
- Bottoms from the salt bath

Radiological/Chemical Composition

Radiological: According to MC&A data the total uranium concentration is less than 20% and the uranium-235 isotopic concentration is less than 1.25 wt.%. Sampling has been schedule to verify the assigned assay.

Chemical: Volatile organics were not used in the process of uranium extrusion at RMI and are not constituents of concern for this waste stream. Barium is the primary concern for these wastes. Other metals that have been detected in these wastes as well include cadmium, chromium, and lead.

Hazardous Waste Listings and Characteristics

Listings: Process knowledge does not indicate that these wastes contain or came into contact with any listed wastes.

Characteristics: Based on the matrix of the material and process knowledge of the generation of the waste, it is not expected to be ignitable, corrosive, or reactive. Barium is the only constituent found in these wastes that exceeds its respective TC regulatory level. These wastes are characterized by the waste code D005 for barium.

TSCA Regulated PCB or Asbestos Waste, and OAC Infectious Waste

This waste is not regulated PCB, asbestos, or OAC infectious waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution

This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See FS-F-5716 for further detail.

Container Numbers W233544 and 234484

The material in these drums is described as Scrap Salts, High Fluoride, Including Floor Sweepings and is characterized under MEF 3913.

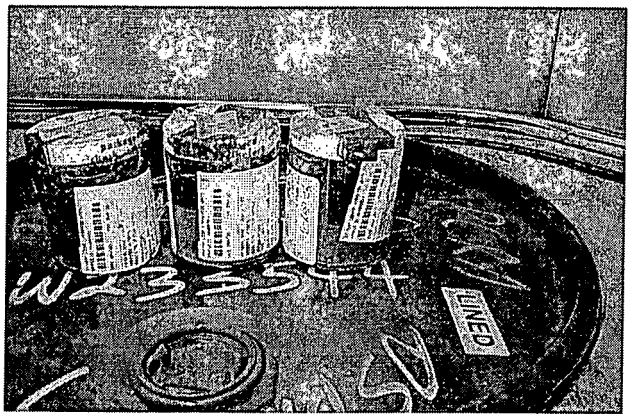

Figure 2.4 – W233544 Contents

Figure 2.5 – W234484 Contents

Determination
RCRA-hazardous, low-level radioactive, mixed D006

Description
Sampler's logs describe the waste as "dirt" and "powder."

Process Generating the Waste
Plant 4 was the green salt plant where UO_3 was converted to UF_4 (green salt). The green salt would then be packaged and sent to Plant 5 and used as the feed material to form uranium metal. Based on visual inspections, this material consists of particulate waste possibly generated by a vacuum cleaner or a dust collector. The actual activity generating this waste and the specific area where this waste was generated is unknown.

Radiological/Chemical Composition
Sampling and analysis was conducted on this material under sample plan 2003-1677, and indicates total uranium from 271000 to 387000 ug/g or 27.1% to 38.7% and U235 at 0.802% to 0.82%.

Sampling and analysis was conducted on this material under FEMP SAP 97-1397. The results indicate that the waste exhibits the characteristic of toxicity for cadmium, chromium, and lead. The wasted is regulated as a hazardous waste under RCRA and is assigned D006, D007, and D008 hazardous waste codes.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See FS-F-5716 for further detail.

Container Number W514065
The material in this drum is described as U_3O_8 (Black Oxide) +8 Mesh Low Fluoride and is characterized under MEF 50364.

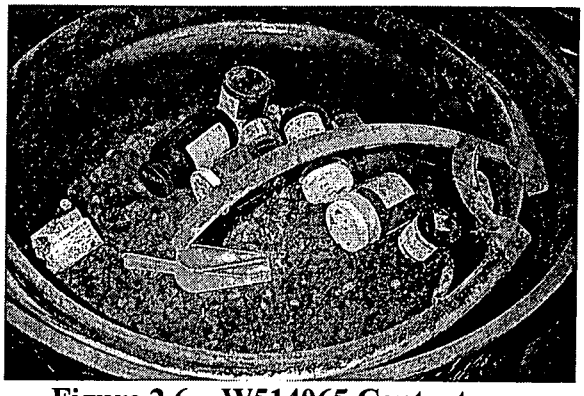

Figure 2.6 – W514065 Contents

Determination
RCRA hazardous waste, only hazardous for chromium; D007 (chromium), F001/F002

Description Name
This material is coded as U_3O_8 +8 mesh - low fluoride from the Plant 8 Box Furnace.

Process Generating the Waste
Recycle materials containing impurities were roasted in the Plant 8 Box Furnace to oxidize the impurities. Recycle material included uranium metals, black oxide (U_3O_8), furnace salts, dust collector materials, floor sweepings, and miscellaneous burnables.

The Visual Inspection Report describes this material as: black material, powder, some 1/4" to 1/8" chunks and some light green color on the surface and some white material mixed in. This description is consistent with the 122 Material type code description of +8 mesh size uranium oxide, which would have been or contained coarse material. A lot code assignment of 824SRC/122 MTC and the Visual Inspection description are consistent with a product of the Box Furnace.

Materials sent to the Box Furnace were recycle material including uranium metals, black oxide (U_3O_8), furnace salts, dust collector materials, floor sweepings, and miscellaneous burnables. The Box Furnace has been determined to be a Hazardous Waste Management Unit (HWMU) based on evidence that rags containing spent solvents and degreasing solvents were processed through the furnace. Based on the mixture rule, this waste stream will receive the spent solvent designation F001/F002 for the spent solvent 1,1,1-trichloroethane.

Radiological/Chemical Composition
Radiological analysis conducted in January 2004 indicated a total U concentration of 68 69.17. 6% and the weight percent of U^{235} is 0.905 943 wt%.

Chromium was the only TC metal detected and was reported at a concentration greater than the regulatory limit. The detection of chromium may be attributable to uranium interference, but this is not confirmed. This waste will be considered hazardous for chromium based on the existing information.

The waste is therefore, characterized as D007 (chromium), F001/F002 RCRA hazardous low-level mixed radioactive waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste is not expected to be pyrophoric, combustible, reactive, or hydrogen generating. There is a potential for some of this waste to generate methane. See
FS-F-5716 for further detail.

Container Number W234711, W234852, and W234882
The material in these drums is described as Oily Sludge's and Grease and is characterized under MEF 10027.

Figure 2.7 – 234711 Contents

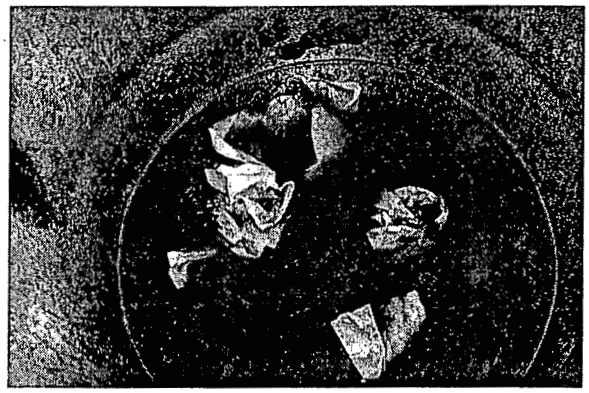

Figure 2.8 – W234852 Contents

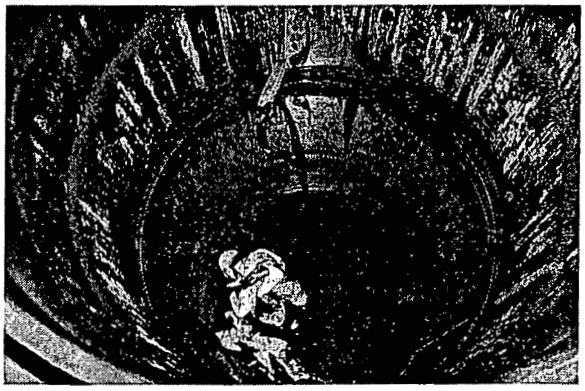

Figure 2.9 – W234882 Contents

Determination
RCRA hazardous (F001, D039, D040), low level waste.

Descriptive Name
This material is described by the lot code marking as contaminated insoluble oil and sludges generated at Plant 6. Visual inspection indicates the material is mostly oil/sludge and water.

Process Generating the Waste
According to the Plant 6 manager, this waste oil was mainly collected from the routine draining of gear oil from gear housings. Some of the oil may have been generated during repairs and other routine

maintenance on machinery in Plant 6. The most likely source of the water in this waste is coolant water leaking into the gears and contaminating the oil.
1, 1, 1 Trichloroethane (TCA) was not used to clean the gear housings, as it would ruin the bearings. The TCA found in this waste stream is the result of Plant 6 personnel dumping TCA that had been used to clean parts and tools into the waste oil drums.

Radiological/Chemical Composition
According to the laboratory report generated in September 2004, the analysis for W234852 indicates 163000 ug/g uranium or 16.3% and 0.726% U235. The analysis for W234882 indicates 288000 ug/g uranium or 28.8% and 0.775% U235. And the analysis for W234711 indicates 9290 mg/L uranium or21.6% and 0.801765% U235 respectively.

This waste consists primarily of water and oil/sludge. Additional constituents include the following: 1,1,1 trichloroethane [1.3 to 38,000 ppm], acetone [0.40 to <62 ppm], toluene [<.05 to <31], methylene chloride [<.05 to <31 ppm], trichloroethene [<.05 to <31 ppm], tetrachloroethylene [<.05 to <31 ppm], barium [<.2 to .389 ppm].

Samples were taken from the individual oil and water layers in the same drum. The data were percent averaged based upon the layering volumes given in the sampling log to yield one "sample". This provided a significantly greater statistical accuracy for determining constituent concentrations.

Hazardous Waste Listings and Characteristics
TCA used for its solvent properties is RCRA listed F001 waste, therefore, the waste oil will also be considered F001 listed waste. The Plant 6 manager could not explain how any of the other solvent constituents that exist in this waste stream got there, therefore, no other RCRA listings will apply.

TSCA Regulated PCB, Asbestos Waste, and OAC Infectious Waste
Based on process knowledge this waste is not expected to be TSCA regulated or contain asbestos or infectious waste.

Pyrophoricity, Combustibility, Reactivity, Gas Evolution
This waste has been evaluated for pyrophoricity, combustibility, reactivity, and gas evolution. The results of the evaluation indicate the waste does not exhibit pyrophoric, or reactive characteristics. However, this waste stream does exhibit the potential to be combustible in the presence of an external ignition source, and to produce methane gas. See FS-F-5716 for more specific information.

Table 2-1 – Inventory Summary

MEF Number	Container Number	Container Type	Tare Weight	Net Weight	Lot Code	% U-235	% U	U LBS	Description
2987	W207183	110	228	390	S093-240-O-062-0260	0.93	26.72	104.21	Dust Collector Residues, High Fluoride
2987	W207184	110	221	180	S093-240-O-062-0260	0.93	26.72	48.10	Dust Collector Residues, High Fluoride
20139	W207823	085	174	178	X888-FTA-O-044-S303	1.1	15.08	26.84	Sludge's Salt Soft, chloride
3913	W233544	030	36	5	R100-400-V-065-0499	1.0	70.00	3.50	Scrap Salts, High Fluoride
3913	W234484	055	73	178	R100-400-V-065-0305	1.0	60.00	106.80	Scrap Salts, High Fluoride
10027	W234711	085	148	464	R078-600-V-039-0447	0.78	22.20	103.01	Sludge's, Oily
10027	W234852	085	133	380	R078-600-V-039-0447	0.78	22.20	84.36	Sludge's, Oily
10027	W234882	085	133	286	R078-600-V-039-0447	0.78	22.20	63.49	Sludge's, Oily
50364	W514065	085	137	833	R094-824-0-112-4127	0.943	69.17	184.93	U308 + Mesh. Low Fluoride

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3. PROJECT PLANS AND MANAGEMENT

3.1. Project Work Plan

This Project Work Plan has been prepared to describe the scope of work and activities to accomplish the work that is required to disposition the inventory of waste specified in Section 2. The planning and execution of this work is the Uranium Assay Adjustment Project.

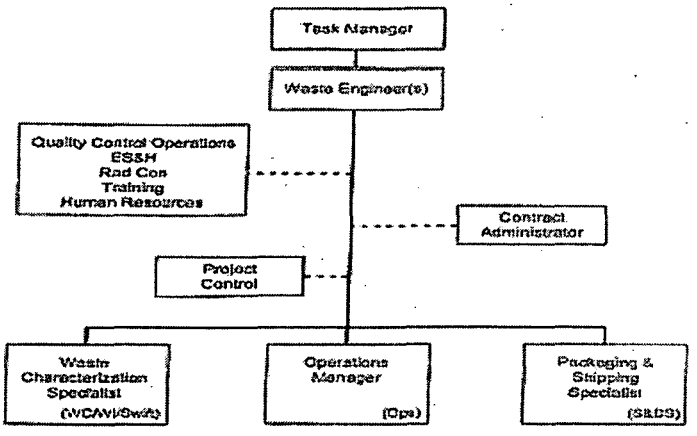
The Uranium Assay Adjustment Project is a sub activity of the larger Waste Disposition activity located in the Fluor Fernald Work Breakdown Structure (WBS) under WBS element 1.1.1.H.E. within the Silos Project. The Silos Project is located in Project Baseline Summary (PBS) 7. Waste Disposition scope includes the disposition of all Old Generation Wastes remaining on-site after the close of the Waste Management Project with was located in PBS 10 and PBS 11 respectively.

3.2. Project Management

3.2.1. Organization

The Project Team has been organized under the Operations support section of the Waste Shipping and Receiving Department within the Silos Project. Figure 3-1 shows how the Project Team has been organized. The Project Team has been assembled with participation from the Project Technical Support Area, the Project Management area, and the Operations area.

Figure 3-1 – Project Organization



Task Manager

The Task Manager has oversight in managing all activities of the Project. These include:

- Directing project activities in accordance with customer and corporate requirements including applicable laws, regulations, standards, and specification to achieve the required results.
- Communicate formally and informally with DOE, Corporate and upper level project management.

Waste Engineer(s)

The Waste Engineer(s) is (are) responsible for leading and directing all activities of the Project. These include:

- Being the focal point of project activities and ensuring all technical, quality, cost, and schedule requirements are being met.
- Directing the preparation and maintenance of all project plans and procedures.
- Directing the acquisition or otherwise securing of materials, equipment, and services necessary to prepare the facility for process operations.
- Plan, schedule, review, coordinate, and integrate the work of the project team to produce deliverables that accomplish project milestones and objectives.
- Preparing work packages and coordinating their review and approval.
- Tracking project progress and preparing and providing project progress and status reports.
- Tracking and expediting the resolution of problems that could threaten project success.
- Planning, administering and overseeing personnel selection, training, and qualification.
- Providing field support to Operations during processing and packaging operations.

Operations Manager

The team's Operations Manager will assist the Task Manager as needed in handling the waste through characterization and preparation for shipment. These include:

- Ensuring operational readiness of equipment and personnel and taking any action necessary to achieve and maintain readiness.
- Planning and supervising processing activities and staging of waste for shipping.
- Planning and supervising the handling of waste and the collection of samples and their identification, tracking and control.
- Planning and supervision of housekeeping and maintenance activities of the facility and its equipment.

Packaging and Shipping Specialist

The Team's Packaging and Shipping Specialist is responsible for assisting the Task Manager in ensuring the waste is properly classified, packaged and shipped to the treatment facility and ultimately to the disposal facility. This includes:

- Ensuring that all containers are properly packaged, marked, and labeled in accordance with 49 Code of Federal Regulations (CFR).
- Reviewing the characterization data to properly classify the waste.
- Preparing the shipping manifest(s).
- Preparing other associated documents required to make up the acceptance data package required for disposal.

Environmental Safety and Health
The project's Environmental Safety and Health program is the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Quality Assurance
The project's Quality Assurance program is the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Project Control
The project's project control activities are the responsibility of the Task Manager and will be implemented by the Project Team with assistance from the staff assigned to the project.

Contract Administration
The project's acquisition of equipment, supplies, and services is the responsibility for the Task Manager and will be performed with assistance from the Contract Administrator assigned to the Project.

3.2.2. Project Schedule
The project schedule is maintained by Project Control, which maintains the schedule and coordinates with the Waste Engineer(s).

3.2.3. Stop Work Action
All project team personnel have the authority to stop work for any condition adverse to safety or quality without fear of retaliation.

3.2.4. Project Documentation and Data
Project documentation will be maintained in accordance with site document control procedures. The documentation will include contractual records, official correspondence, operations logs, waste logs, sampling and analysis logs, self-assessments, audits, and records of treatment and disposal.

3.2.5. Sampling and Analysis
Sampling and analysis, if required, will be performed according to PL-3078, *FCP Waste Characterization Program Plan*, and specific sampling plans provided by the Project Team in accordance with PL-3048, *Prototype Sampling and Analysis Plan for Waste at the FCP*.

3.3. Health and Safety
The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Health and Safety programs and/or procedures.

3.4. Quality Assurance
The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Quality Assurance programs and/or procedures.

3.5. Radiological Protection

The Project Team will implement the Integrated Safety Management System and all applicable Fluor Fernald Radiological Protection programs and/or procedures.

3.6. Project Work Instructions

The Project Team will develop and approve work instruction and procedures in accordance with EW-1016, Waste Management Project Work Authorization Program.

3.7. Procurement

The projects required acquisition of equipment, materials, and services will be performed in accordance with all applicable Fluor Fernald procurement programs and/or procedures.

4. Processing and Handling Facility

This section describes the design of the Processing Facility to be established in Building 93A. The Waste Disposition Project has been given authorization to establish a waste processing and packaging enclosure in the east bay of Building 93A that currently houses the Garage and Laundry.

4.1. Design

The Processing and Handling Facility is a temporary enclosure installed in the east bay of Building 93A. The east bay of the building measures 30 feet wide by 55 feet long. The Enclosure occupies approximately 294 square feet and is located in the northwest corner of the work area inside of the east bay. It is constructed out of steel 8" metal studs placed approximately twenty-four inches on center running from floor to ceiling and covered with a heavy duty plastic sheeting commonly used in asbestos abatement work. The plastic sheeting is firmly attached to the enclosure frame so that it forms a barrier sufficient to control the release of radioactive contamination from within. Access to the work area inside the enclosure is gained through an opening equipped with Freezer Strips hanging vertically and overlapped approximately 2" from top to bottom. A drawing of the area is attached to this plan as Attachment 1.

A Satellite Clothing Area (SCA) is established adjacent to the enclosure and is stocked with appropriate levels of Personal Protective Equipment (PPE) as needed to support the safe and efficient completion of required work within the enclosure. Personnel working in the enclosure will don and doff PPE in this area.

4.2. Preparation

The Processing and Handling Facility is a temporary enclosure installed in the east bay of existing Building 93A. Equipment available for use in the facility on-site will be identified and staged for installation. Equipment that is not available on-site will be purchased and installed as required.

4.3. Checkout and Startup

When the facility installation is complete, a management assessment will be conducted to determine its readiness to start operations. A self-assessment checklist will be developed for the assessment. A team will be formed to conduct the assessment and determine readiness to start operations.

4.4. Operations and Maintenance

Like wastes will be processed in campaigns. Any secondary waste generated during the campaign will be packaged and staged for dispositioning to like waste streams for newly generated waste on-site. PPE, HEPA filters, floor coverings, and other secondary waste will be reviewed by the Waste Acceptance Organization to determine if it meets the WAC for onsite disposal. Project Waste Identification and Disposition (PWID) number 648 has been generated for the processing and secondary waste. This document identifies the characterization and management of these wastes and is included as Attachment 2.

Facility operations will be conducted according to governing procedures/work packages/work tickets/technical specifications. Maintenance will be performed according to procedures on equipment as needed to facilitate process operations. Routine maintenance such as lubrication and cleaning will be performed regularly in accordance with manufacturer instructions.

Supplies such as PPE, absorbent materials, housekeeping supplies, containers for overpacking and repacking will be kept on-site. Spare parts such as high efficiency particulate air (HEPA) filter elements, heating, ventilation, and air-conditioning (HVAC) parts, lights, air monitoring equipment, and radiation monitoring equipment will be available as needed.

4.5. Dismantling, Characterization, and Disposal

The Process and Handling Facility will be dismantled, characterized, and disposed of along with Building 93A. The D&D of this building is discussed in Amendment 3 of the Miscellaneous Small Structures Phase II Implementation Plan for Above Grade Decontamination and Dismantlement of Components 18Y and 93A. The enclosure will be dismantled for disposition on the OSDF provided that it meets the OSDF WAC. It is not anticipated that decontamination of the concrete will be required since there is very limited potential for releases of hazardous waste from this operation. However, a review of process operations will be conducted following completion of the blending process to determine if there were any significant releases of hazardous waste to the concrete. If so, the FCP will decontaminate the affected area with a solution of potable water. The rinsate will be analyzed for the constituents associated with the release to ensure that it meets Ohio EPA closure guidance levels. The slab will be dispositioned in the OSDF provided that it meets the OSDF WAC. Results from any sampling would be included in the task order completion report for Building 93A.

5. Management of Materials and Waste

5.1. Primary and Secondary Waste

During the project, two main types of waste will be managed: primary waste and secondary waste. Primary waste includes all waste containers described in Section 2. Secondary waste includes byproduct streams derived from processing the primary wastes.

To the greatest extent possible and consistent with the treatment subcontractors waste acceptance criteria, secondary waste will be accumulated, characterized, and dispositioned based on the attributes of the primary waste with which they are associated. Efforts will be made to prevent contamination of solid waste materials with mixed waste constituents. Uncontaminated solid wastes are managed separately and properly disposed by FCP site personnel.

All hazardous wastes generated from this process (including blended and secondary wastes) will be stored in HazStor lockers identified in the FCP's RCRA Part B Permit Application after generation until shipping.

Liquid wastes will be limited to triple rinse of the mixer and mill hopper. This rinse water will be collected, characterized to MEF 3912, managed as hazardous waste and disposed of at the Advanced Waste Water Treatment plant.

Blend Factors for No Disposal Path Containers
3/4/2005

INVENDE	MEC	TYPE	INVENTORY DESCRIPTION	CONT TYPE	TARE	NET	STATUS	PDP	SRC	CI	MDC	SEQ	ITEM	DU-235	%U	gpc/g U-235	Minimum Blend Ratio using 37-47% Safety Factor	lbs of blend material per lb of waste	lbs/cu ft of carrier/blend
W207183	2987	RCRA	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	110	228	390	ACTIVE	S093	240	0	062	0260	000002	0.94	11.3	2294.35	2.30	1.30	998
W207184	2987	RCRA	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	110	221	180	ACTIVE	S093	240	0	062	0260	000003	0.99	30.2	6457.97	6.50	5.50	994
W207823	20139	RCRA	SLUDGES, SALT, SOFT, CHLORIDE (FOR PLANT 8 RECOVERY)	085	174	178	ACTIVE	X888	FTA	0	044	S303	000001	0.835	38.7	6979.93	7.00	6.00	997
W233544	3913	RCRA	SCRAP SALTS, HIGH FLUORIDE, INCLUDING FLOOR SWEEPINGS	030	36	5	ACTIVE	R100	400	V	065	0499	000001	0.82	34.8	6163.78	6.25	5.25	986
W234484	3913	RCRA	SCRAP SALTS, HIGH FLUORIDE, INCLUDING FLOOR SWEEPINGS	055	73	178	ACTIVE	R100	400	V	065	0305	000004	0.802	27.1	4694.59	4.75	3.75	988
W514065	50364	RCRA	U3O8, +8 MESH - LOW FLUORIDE	085	137	833	ACTIVE	R094	824	0	122	4127	000001	0.943	69.17	14089.10	14.00	13.00	1006
W234711	10027	RCRA	SLUDGES, OILY	085	148	464	ACTIVE	R078	600	V	039	0447	000008	0.78	22.2	3740.26	3.00	2.00	1247
W234852	10027	RCRA	SLUDGES, OILY	085	133	380	ACTIVE	R078	600	V	039	0447	000006	0.73	16.3	2570.18	2.25	1.25	1142
W234882	10027	RCRA	SLUDGES, OILY	085	133	286	ACTIVE	R078	600	V	039	0447	000007	0.78	28.8	4852.22	4.00	3.00	1213

*Recommended blend ratio using 37 - 47% safety factor, waste type dependent
W233544 and W234484 can be blended together and then perform a final blend at a 4 to 1 ratio.
W207823 requires size reduction prior to blending.

5.1.1. Waste Categorization

Primary wastes described in Section 2 will be campaigned into two groupings:

- Group 1 - Granular wastes containing little or no liquid/moisture that can be freely removed from their current waste storage container by pouring or dumping aided by the use of hand tools. Group 1 wastes may require size reduction by milling using a Straub Company Model 4-E mill. This mill was selected to provide a reasonable production rate while reducing the material to the same general particle size as the blending sand. The material then will be added to a mechanical mixer and blended with dry, general-purpose sand.

- Group 2 - Liquid/sludge waste containing organic constituents. These wastes are multiphase wastes that contain a solid phase, and an organic/aqueous liquid phase or both. This type of waste can be freely removed from their current waste storage container by pouring or dumping aided by the use of hand tools. Group 2 wastes require little or no preparation before blending/mixing and may be added to a mechanical mixer and blended with inert material, such as clean sand or absorbent material and a super absorbent such as Quick Solid 50 ™. Containers W234711, W2234852, and W234882 are Group 2. The remainders are Group 1.

Containers within the groups will not be commingled with the exception of W233544 and W234484, which will be combined.

5.1.2. Waste Processing Objective and Methodology

The objective of the project is to blend/mix the waste described in Section 2 with chemically compatible, non-radioactive material with similar physical properties to reduce the overall Uranium 235 concentration. The Uranium 235 concentration must be equal to or less than 1900 pico curies per gram (1900pCi/g U-235). 1900 pCi/g is the concentration-based limit for waste containing fissile material at Envirocare of Utah disposal facility. To ensure the final waste is $\leq$ 1900 pCi/g , a 37-47 % safety factor is included in the blend ratio (see attached Table 5.1 with blend info), which will result in a final waste with U-235 targeted at between 800 and1200 pCi/g . Blending/mixing will require the final waste form to be as homogeneous as possible so that the original waste material cannot be mechanically separated from the blending material. The final waste form must be blended/mixed so that, if sampled, the final waste will demonstrate uranium 235 concentration of $\leq$ 1900 pCi/g. has been achieved This demonstrates $\leq$ 1900 pCi/g on a mass balance basis, which requires no sampling. (See Table 5.1 for Blending Ratio) The project has chosen dry, general purpose sand as the blending medium.

The methodology used to achieve an overall concentration of uranium 235 in the waste of 1900pCi/g U-235 will be based on the physical characteristics of the waste. Some of the waste streams will require size reduction and/or granulation before being blended/mixed. Others will require little preparation before blending/mixing. This is why the project has determined to campaign the waste as discussed above. By whatever means the project

determines is needed to prepare the waste for blending/mixing, once the waste has been prepared for blending/mixing the blending material will be added.
Determining the amount of blending material to add to the waste will be accomplished using the net weight of the waste in each container, the percent Uranium and the percent Uranium 235 in the waste. With this information we can find the corresponding percent U-235 in the center column on the table below, then find the percent Uranium in the left hand column on the table below which corresponds to the maximum concentration of Uranium allowed in the waste in order to stay within the 1900pCi/g maximum concentration of U-235. Once the maximum Uranium concentration allowed in the waste has been determined, we will calculate the amount of blending material to be added to the waste to bring the concentration of Uranium in the waste down to the desired percentage in the table.

Table 5-2, U-235 Enrichments Below Limit of 1900 pCi/g

Maximum % Uranium	% U-235	Approximate pCi/g U-235
1	9	1900
2	4.5	1900
3	3	1900
4	2.2	1900
5	1.8	1900
6	1.5	1900
7	1.25	1900
8	1.07	1900
9	0.95	1900
10	0.85	1900
11	0.77	1900
12	No enrichment	>1900

Example:
Drum number W207184 has a net weight of 180 pounds, a uranium concentration of 30.2 percent, and a U-235 concentration of 0.986 percent.

Using Table 5-1 we see there is no reference for 0.986 percent U-235, so we round up to 1.07 percent U-235. The maximum Uranium concentration for the 1.07 percent U-235 waste is 8.0 percent at 1900 pCi/g U-235.

To find out how much blending material to add to this drum to reduce the Uranium concentration to 8.0 percent, we perform the following calculations:

(180 lbs. net weight * 30.2 % Uranium concentration) 54.36 net lbs. Uranium in the waste.

To find the multiplier that will give you the new net weight at 8.0% Uranium, you do the following:
(100% / 8%) = 12.5 is the multiplier to find the new net weight.

The waste will be blended in a small, electric concrete mixer. Waste and clean, dry, general purpose sand will be introduced to the mixer based upon the included blend recipe (Table 5.1) and blended until a homogenous product is achieved. A small grinder mill (Straub Company Model 4-E) has been procured to size-reduce the furnace salts and U_3O_8 material to a similar size as the sand.

The three Group 2 containers may be blended in their existing containers. Liquid will be absorbed with Quick Solid 50, a polymer absorbent material that is excellent for absorbing oils. Then dry sand will be stirred into the drum to achieve the required concentration of uranium to meet the TSDF WAC. The project will determine during the process whether use of the mixer will be more effective than hand mixing.

Cross-contamination will be avoided by sequencing the containers so the F-listed materials are performed last, with the sludges being the last of the F-listed. Containers will be worked one at a time, with the exception of W233544 and W234484, which are the same material and will be combined into one shipping container. Between containers of waste, the mixer will be triple rinsed with water. The water will be collected, characterized as MEF 3912, managed as hazardous waste and disposed of at the Advanced Waste Water Treatment plant. The feed hopper and grinder plates of the mill will also be triple rinsed.

5.2. Materials Management

5.2.1. Waste Minimization by Prevention of Contamination

Special precautions will be taken to prevent contamination (e.g. Radiological, Chemical) and in areas where spills on the buildings floor are possible, Herculite™ or equivalent floor covering will be used to provide a local contamination barrier. Otherwise the floors in the building will not be covered. It is not feasible to cover the entire floor of the enclosure. Fork truck traffic would destroy it. A Herculite™ e cover will be placed on the floor in the area where the source drum, destination drum, mill, and mixer are located. The floor covering will have a berm constructed of PVC pipe wrapped in Herculite™, or a temporary spill pallet may be used, depending on operations requirements. Only one drum at a time will be blended, so a large containment is not necessary. The covering will be reviewed by the Waste Acceptance Organization to assure it meets the Waste Acceptance Criteria for on-site disposal. If not, it will be disposed of at an off-site TSDF.

Also, to minimize potential waste materials brought into the packaging and handling facility exclusion zone, unwrapping, decontainerizing, or unpackaging of equipment (including tools and materials) will be done prior to entry into the packaging and handling facility. This will keep as much packing material as possible from becoming contaminated.

5.2.2. Prevention of Environmental Media Pollution

Potential discharges of pollutants to soil, surface water, ground water, and the atmosphere will be minimized by the following measures. For soil and ground water pollution prevention, project activities will be performed inside of Building 93A. Care will be exercised at all times to prevent spills from occurring inside or outside of the exclusion zone. When spills do occur, prompt response action by the Project Team will be take to

contain and clean up the spill, with all recovered materials being properly managed as recyclable materials or as waste.

A NESHAP Part 61 evaluation was performed and concluded that continuous air monitoring is not required. The evaluation is included in this Plan as Attachment 3.

There will be no liquid generated by the process with the exception of decontamination rinsate. Liquid in the three sludge drums (Group 2) will be absorbed with QuickSolid 50 or similar absorbent prior to blending.

5.2.3. Management of Facility Waste Containers

Primary waste in this project are described in Section 2. Secondary wastes will include used PPE which has exceeded its useful life, contaminated area isolation materials, HEPA filters, and uncontaminated solid wastes. The Project Team will manage all waste materials in cooperation with other FCP personnel, to minimize hazards to project personnel, other personnel at the FCP site, the public, and the environment.

5.2.4. Facility and Container Inspections

Inspections of waste in holding containers and equipment in the packaging and handling facility exclusion zone will be conducted. In accordance with regulatory requirements, container storage, staging, areas will be inspected when in use. Inspections in container storage or staging areas will include, but not be limited to, inspection of containers for leaks, damage, indications of overpressure, loose or illegible labels, aisle spacing, and waste compatibility. The presence and accessibility of adequate quantities of emergency response equipment will be verified.

Process equipment will be inspected for any mechanical or electrical conditions that could cause and accident or emergency or render the equipment inoperable if not corrected. If such a condition is found, the equipment will immediately be tagged out of service, and maintenance or repairs will be initiated.

5.2.5. Spill Response

Any time a leaking container or spill results in an accumulation of dry mixed wastes in process equipment or on the floor, immediate action will be taken to contain, clean-up, and package the materials in question. Project Team personnel will perform any spill response and housekeeping within the exclusion zone in accordance with applicable site procedures. In the event of a large spill or a spill that causes a condition immediately dangerous to life and health (IDLH), Project and other site personnel will evacuate the exclusion zone, notify the Fluor Fernald Assistant Emergency Duty Officer (AEDO) and stay outside the exclusion zone until allowed to return by the AEDO. Spill material will be containerized and evaluated for return to the blending process.

5.2.6. Management of Secondary Waste

Secondary waste will be segregated into separate containers by category so that they may be managed as efficiently as possible. The most significant secondary waste stream will be PPE. At each break, personnel in the exclusion zone will pass through a dress out area

where PPE will be doffed. Separate plastic lined collection drums for protective clothing, used respirators, outer booties, and disposable items (e.g., gloves, tape, filter cartridges, etc..) will be provided at the egress station. Project personnel will manage these accumulated secondary wastes. Project personnel will also manage the segregation and handling of PPE.

5.3. Materials Management

Non-waste materials such as equipment, spare parts, and consumable supplies will be managed to prevent emergency situations from spills or releases, and to prevent project delays due to shortage of Critical supplies. Supplies will be received, handled, processed, and stored in accordance with applicable site procedures. Regular periodic inspections of both the storage area and the inventories will be made.

6. Waste Treatment

6.1. Commercial Treatment

The waste in this project will be treated to meet Land Disposal Restriction (LDR) treatment standards found in 40 Code of Federal Regulations (CFR) Part 268, by Envirocare of Utah, under the Vacuum Thermal Desorption Contract (Contract Number 02FF1064). Envirocare of Utah has within its LLMW treatment facilities a robust treatment train that is designed to handle LLMW with waste codes assigned to the waste herein. Envirocare of Utah will perform all waste treatment activities under their commercial permits and licenses and in accordance with Federal, State and local laws and regulations.

6.2. Certificate of Treatment

The required certificate of treatment will be acquired from Envirocare of Utah and will be determined to meet the needs of the project. It will become part of the project record file.

7. Waste Disposal

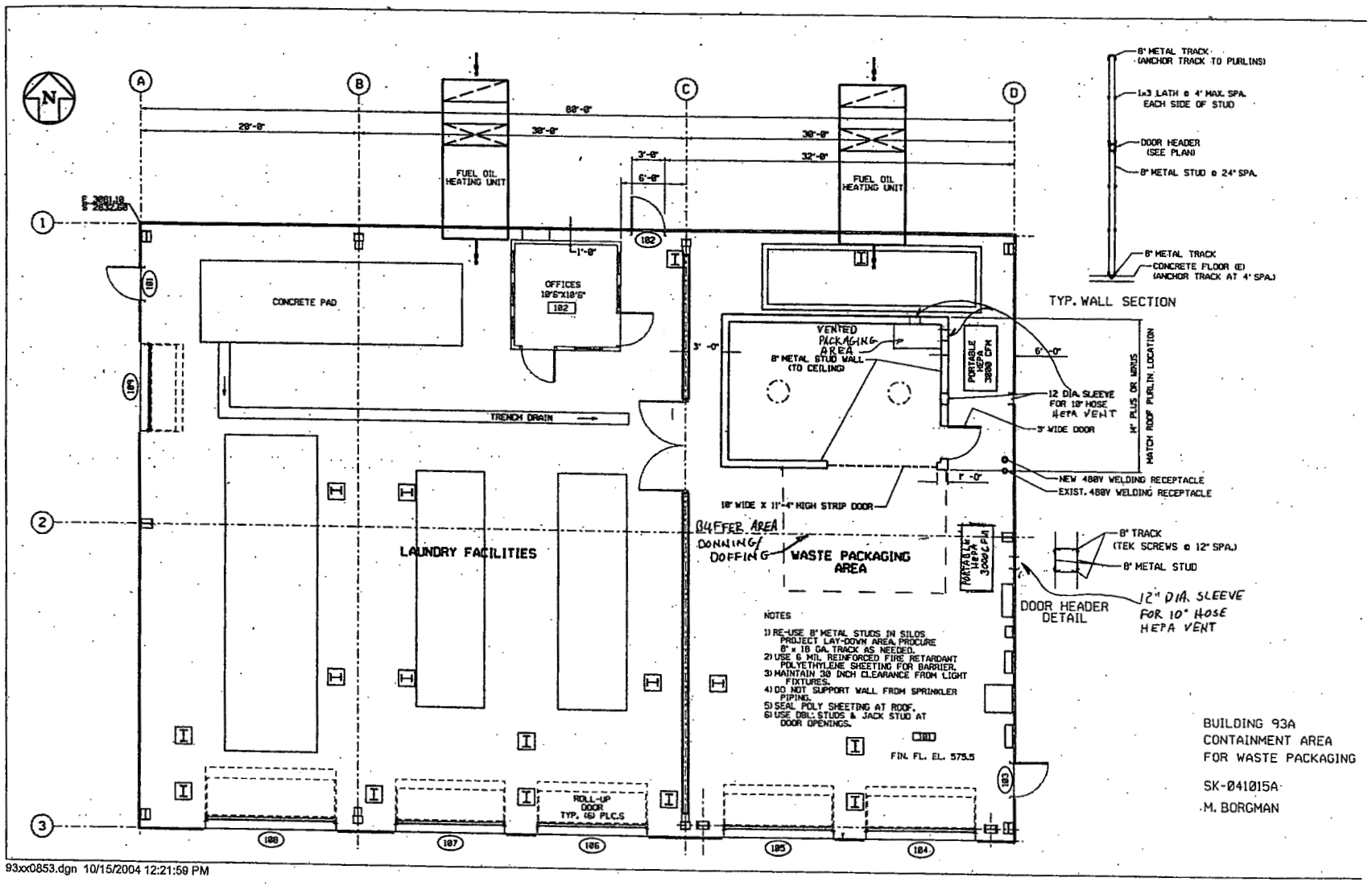
7.1. Commercial Disposal

The waste in this project will be disposed of by Envirocare of Utah, under the Vacuum Thermal Desorption Contract (Contract Number 02FF1064). Envirocare of Utah has a LLMW disposal facility. Envirocare of Utah will perform all waste disposal activities under their commercial permits and licenses and in accordance with Federal, State and local laws and regulations.

7.2. Certificate of Disposal

The required certificate of disposal will be acquired from Envirocare of Utah and will be determined to meet the needs of the project. It will become part of the project record file.

ATTACHMENT 1:
LAYOUT OF BUILDING 93A



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ATTACHMENT 2

PWID 648

5880

02 MAR 2005

PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT

Project Summary Information

Project #:	Project Name:	Date:	Prepared By:	Rev.:	OU:
648	URANIUM ASSAY ADJUSTMENT PROJECT	01 FEB 2005	V. HUFF	0	

Project Description:
ONE TIME PROCESSING OF SLIGHTLY ENRICHED MIXED LOW-LEVEL WASTE FOR SHIPMENT TO AN OFF-SITE TSDF FOR FURTHER TREATMENT OF RCRA CONSTITUENTS. PROJECT WILL INCLUDE ALL MATERIALS GENERATED DURING THE BLENDING OF THESE WASTES, INCLUDING PPE, AREA ISOLATION MATERIALS, "RCRA EMPTY" DRUMS, DECONTAMINATION WATERS, HEPA FILTERS AND UNCONTAMINATED SOLID WASTES. BLENDING ACTIVITIES WILL TAKE PLACE IN BUILDING 93A.

PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT

5880

Waste Stream Identification and Disposition

Profile	MTL Name	Bulk Vol (cu yd)	Weight (lbs)	OSDF WAC	Disposition Comment
2987	BHO-001		570.00		DUST, DUST COLLECTOR BAGS, AND DUST COLLECTOR RESIDUE FROM TRANE INCINERATOR FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
3912	043427				DECON WATER FROM PROCESS EQUIPMENT IN THE URANIUM ASSAY ADJUSTMENT PROJECT
3913	BHO-001		833.00		POWDER/DIRT POSSIBLY GENERATED BY A DUST COLLECTOR OR VACUUM CLEANER FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
10027	BHO-001		178.00		INSOLUBLE OIL AND SLUDGES FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
20139	BHO-001		183.00		SOFT SALT SLUDGES FROM RMI OPERATIONS FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
50364	BHO-001		1,130.00		U3O8, +8MESH FROM ROTEX SCREENING OPERATIONS FOR SHIPMENT TO AN OFF-SITE TSDF. MATERIAL WILL BE BLENDED DOWN TO MEET RAD WAC FOR OFF-SITE TSDF.
80094	BHO-001	2		PW	ITEMS CLASSIFIED AS 'ABOVE OSDF WAC' REQUIRING DIRECT HAUL TO WPRAP INCLUDING BUT NOT LIMITED TO CRUSHED "RCRA EMPTY" DRUMS
92000	BHO-001			YW	HEPA FILTERS - DATA MUST BE AVAILABLE TO ENSURE THAT FILTERS MEET OSDF WAC
92023	BHO-001	2		YW	PLACE BAGGED COMPRESSIBLE TRASH IN ROLL OFFS FOR OSDF DISPOSAL
92101	BHO-001			YW	PLACE NON-COMPRESSIBLE DEBRIS IN ROLL-OFFS FOR OSDF DISPOSAL

PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT

Comments
NOTE 1: ALL WASTE ACCEPTANCE CRITERIA, INCLUDING SIZE, MUST BE MET FOR WASTE PROFILE 92000. NOTE 2: ALL DECONTAMINATION WATERS MUST BE MANAGED IN COMPLIANCE WITH WASTEWATER DISPOSAL RESTRICTIONS.

5880

02 MAR 2005

PROJECT WASTE IDENTIFICATION AND DISPOSITION (PWID) REPORT

Approvals

1. Waste Acceptance Organization Section Lead: **MIKE RAMIREZ**	Date:	Comments:
2. Waste Acceptance Organization Manager: **SCOTT OSBORN**	Date:	Comments:
3. Radiological Engineering: **COREY FABRICANTE**	Date:	Comments:
4. Soil and Disposal Facility Project Director: **N/A**	Date:	Comments:
5. Environmental Compliance: **FRANK JOHNSTON**	Date:	Comments:
6. Generator Project Representative: **STEVE HEFFRON**	Date:	Comments:

1,2,3,6 - Complete for all projects
4 - Required when soil is generated or the project involves work being done at or below grade
5 - Required when material is being free-released.

ATTACHMENT 3:
NESHAP SUBPART H EVALUATION OF THE URANIUM ADJUSTMENT PROJECT

5880

January 26, 2005

To: John Samples
Fm: Phillip Spotts

Subj: NESHAP Subpart H evaluation of the Uranium adjustment Project

1. Using the information provided in the UAP work plan I modeled a highly conservative scenario to estimate air emissions and potential dose for the source.
   a. I assumed that all the material in the drums has the potential to become airborne. This is not realistic as a great portion of the material consists of material like firebrick, filter bags, trash, etc. Making this assumption though allows us to state with confidence that the resulting dose estimates are higher than what is actually expected.
   b. I have assumed that 0.1% of the processed material becomes airborne. I assumed this for all drums except for the oily sludge drums, for those I assumed a 0.01% emission rate. Again this is probably high for the oily sludge but allows us to estimate some emissions and not zero.
   c. We assume there are no pollution control equipment available for this process. This is a requirement of the NESHAP. We have to use potential emissions and not actual.

2. Given the above assumptions I ran the CAP88PC model with the following results: The highest fence line dose estimate was **0.019 mRem**. This is well below the NESHAP standard of 0.1 mRem used to determine if continuous monitoring is required for this source. **Continuous monitoring is not required under NESHAP**

If you have any questions please give me a call at 648-5295.

Phillip Spotts
Environmental Compliance

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Jan 24, 2005 10:58 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 2002

Comments: URANIUM ADJUSTMENT PROJECT
Building 93A

Dataset Name: U ADJ PRJ
Dataset Date: Jan 24, 2005 10:57 am
Wind File: WNDFILES\5YRCAP88.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.94E-04
BREAST	3.33E-04
R MAR	2.77E-03
LUNGS	3.07E-01
THYROID	2.86E-04
ENDOST	3.54E-02
RMNDR	3.24E-03
EFFEC	3.94E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.26E-03
INHALATION	3.69E-02
AIR IMMERSION	5.58E-09
GROUND SURFACE	1.79E-04
INTERNAL	3.92E-02
EXTERNAL	1.79E-04
TOTAL	3.94E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-238	3.15E-02
U-235	7.91E-03
TOTAL	3.94E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.65E-09
BONE	1.95E-09
THYROID	1.06E-10
BREAST	1.09E-09
LUNG	4.96E-07
STOMACH	5.57E-10
BOWEL	4.56E-10
LIVER	5.73E-10
PANCREAS	3.60E-10
URINARY	6.92E-09
OTHER	4.41E-10
TOTAL	5.12E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.24E-08
INHALATION	4.96E-07
AIR IMMERSION	1.30E-13
GROUND SURFACE	4.18E-09
INTERNAL	5.08E-07
EXTERNAL	4.18E-09
TOTAL	5.12E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	4.08E-07
U-235	1.04E-07
TOTAL	5.12E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	700	721	817	1118	1144	1151	1155
N	1.4E-02	1.3E-02	1.0E-02	5.8E-03	5.6E-03	5.5E-03	5.5E-03
NNW	9.9E-03	9.3E-03	7.4E-03	4.2E-03	4.1E-03	4.0E-03	4.0E-03
NW	9.3E-03	8.8E-03	6.9E-03	4.0E-03	3.8E-03	3.8E-03	3.8E-03
WNW	1.2E-02	1.1E-02	8.9E-03	5.0E-03	4.8E-03	4.8E-03	4.8E-03
W	1.9E-02	1.8E-02	1.4E-02	7.9E-03	7.6E-03	7.5E-03	7.5E-03
WSW	2.0E-02	1.9E-02	1.5E-02	8.4E-03	8.1E-03	8.0E-03	8.0E-03
SW	1.1E-02	1.0E-02	8.0E-03	4.6E-03	4.4E-03	4.4E-03	4.3E-03
SSW	9.6E-03	9.0E-03	7.2E-03	4.1E-03	4.0E-03	3.9E-03	3.9E-03
S	9.5E-03	9.0E-03	7.1E-03	4.1E-03	4.0E-03	3.9E-03	3.9E-03
SSE	1.7E-02	1.6E-02	1.2E-02	7.0E-03	6.7E-03	6.7E-03	6.6E-03
SE	2.8E-02	2.6E-02	2.0E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02
ESE	3.5E-02	3.3E-02	2.6E-02	1.4E-02	1.4E-02	1.4E-02	1.4E-02
E	3.8E-02	3.6E-02	2.8E-02	1.6E-02	1.5E-02	1.5E-02	1.5E-02
ENE	3.9E-02	3.7E-02	2.9E-02	1.6E-02	1.6E-02	1.6E-02	1.5E-02
NE	3.6E-02	3.4E-02	2.7E-02	1.5E-02	1.4E-02	1.4E-02	1.4E-02
NNE	2.4E-02	2.3E-02	1.8E-02	1.0E-02	9.8E-03	9.7E-03	9.7E-03

	Distance (m)				
Direction	1190	1254	1318	1380	1443
N	5.2E-03	4.8E-03	4.4E-03	4.1E-03	3.8E-03
NNW	3.8E-03	3.5E-03	3.2E-03	3.0E-03	2.8E-03
NW	3.6E-03	3.3E-03	3.0E-03	2.8E-03	2.6E-03
WNW	4.5E-03	4.2E-03	3.8E-03	3.5E-03	3.3E-03
W	7.1E-03	6.5E-03	6.0E-03	5.5E-03	5.1E-03
WSW	7.6E-03	7.0E-03	6.4E-03	5.9E-03	5.5E-03
SW	4.1E-03	3.8E-03	3.5E-03	3.3E-03	3.0E-03
SSW	3.7E-03	3.4E-03	3.2E-03	2.9E-03	2.7E-03
S	3.7E-03	3.4E-03	3.2E-03	2.9E-03	2.7E-03
SSE	6.3E-03	5.8E-03	5.3E-03	4.9E-03	4.6E-03
SE	1.0E-02	9.4E-03	8.6E-03	8.0E-03	7.4E-03
ESE	1.3E-02	1.2E-02	1.1E-02	1.0E-02	9.3E-03
E	1.4E-02	1.3E-02	1.2E-02	1.1E-02	1.0E-02
ENE	1.5E-02	1.3E-02	1.2E-02	1.1E-02	1.1E-02
NE	1.4E-02	1.2E-02	1.1E-02	1.1E-02	9.8E-03
NNE	9.2E-03	8.4E-03	7.8E-03	7.2E-03	6.7E-03

5003

Container	wt. Material lbs		U238(%)	U238(lbs)	U235(%)	U235(lbs)
W207183	390		0.113	44.07	0.00942	3.6738
W207184	180		0.302	54.36	0.00986	1.7748
W207823	178		0.2	35.6	0.0125	2.225
W233544	5		0.387	1.935	0.0082	0.041
W234484	178		0.387	68.886	0.0082	1.4596
W514065	833		0.271	225.743	0.00802	6.68066
		Total		430.594		15.85486
W234711	464		0.216	100.224	0.00802	3.72128
W234852	380		0.163	61.94	0.00726	2.7588
W234882	286		0.288	82.368	0.00775	2.2165
		Total		244.532		8.69658
		Released		0.455047		0.016725
		(grams)		206.406		7.586114

Specific Activity

		Ci/yr
U238	3.33E-07 Ci/gm	6.87E-05
U235	2.14E-06 Ci/gm	1.62E-05

Assumptions

- .1% of material is releassed during processing except oily sluges released at .01%
- No pollution control equip exists.